


Framework for Isolation in Adults Over 50



“Social isolation is the distancing of an individual, psychologically or physically, or both, from his or her network of desired or needed relationships with other persons. Therefore, social isolation is a loss of place within one’s group(s)”

(Biordi & Nicholson, 2009)

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EXECUTIVE SUMMARY

Overview

AARP Foundation is dedicated to serving vulnerable people aged 50+ by creating solutions that help them secure the essentials and achieve their best life. Isolation is one of the Foundation's key mission areas, along with Housing, Income, and Hunger (HIHI, combined). The Foundation's Isolation Impact Team engaged ResearchWorks in early 2012 to conduct the first phase of this endeavor, consisting of the due diligence and analysis that would result in a focused way to move forward in the isolation space with a cross-disciplinary framework and key recommendations.

This report presents the results of the first phase of the AARP Foundation Isolation Framework Project by ResearchWorks. The following objectives were accomplished:

- Establish a more thorough understanding of the current state of research related to isolation across multiple disciplines, including the major gaps in our understanding of isolation, with a special focus on research related to adults aged 50+.
- Synthesize the literature, resulting in a unifying definition of isolation.
- Delineate the various measures and indicators of isolation and risk for isolation.
- Identify promising directions and needs for future research.
- Inform future study of isolation within the 50+ population.

Methods

ResearchWorks comprehensively identified, reviewed, analyzed, and synthesized the relevant scientific literature specific to isolation in Americans aged 50+. ResearchWorks conducted interviews with experts in the field of isolation across a variety of disciplines to gain a deeper sense of the field, identify relevant literature, and discuss possible directions for an integrated framework and future research. In order to glean important perspectives to more fully understand (1) relevant internal perceptions; (2) the Foundation's working framework for isolation; and (3) isolation-related programs, products, and priorities, ResearchWorks interviewed key personnel from within AARP Foundation and across the AARP enterprise. The Foundation's Isolation Team members and ResearchWorks collaboratively refined this report along the way.

Key Findings

1. Isolation has been studied by several disciplines ranging from psychology and social work to public health and public policy.
2. There is considerable variety in the ways in which researchers in the field have (1) described, defined, and measured isolation; (2) approached the design of interventions and the evaluation studies of interventions; and (3) conceptualized how isolation happens. Much work remains to be done to improve the state of these three areas.
3. Due to the variations described above and the lack of research with representative samples in general, and comparable representative samples in particular, it is difficult to determine the prevalence of isolation. However, current estimates indicate that isolation could impact up to 17% of Americans aged 50+.
4. Based on a synthesis of the scientific research, this paper proposes the following unifying definition of isolation:
Isolation is the experience of diminished social connectedness stemming from a process whereby the impact of risk factors outweighs the impact of any existing protective factors. A person's lack of social connectedness is measured by the quality, type, frequency, and emotional satisfaction of social ties. Social isolation can impact health and quality of life, measured by an individual's physical, social, and psychological health; ability and motivation to access adequate support for themselves; and the quality of the environment and community in which they live.
5. Isolation in adults aged 50+ occurs due to a complex set of circumstances and factors that exist at the individual, social network, community, and societal levels.
The primary risk factors associated with isolation are:

- Living alone;
- Mobility or sensory impairment;
- Major life transitions;
- Socioeconomic status (low income, limited resources);
- Being a caregiver for someone with severe impairment;
- Psychological or cognitive vulnerabilities;
- Location: rural, unsafe or inaccessible neighborhood/community;
- Small social network and/or inadequate social support;
- Language (non-English speaking); and
- Membership in a vulnerable group.

These factors can be grouped into psychological, physical, and social categories.

Isolation can also be triggered by the following major life changing events:

- Change/Loss of
 - ◆ Social Network
 - ◆ Social Role
 - ◆ Physical Health
 - ◆ Mental Health
 - ◆ Resources

Contextual factors that are relevant to the occurrence of isolation include individual psychosocial states that play a role in isolation, as well as social factors such as social networks, social supports, social engagement and integration, income, mobility, societal factors, and the physical environment.

Health and isolation are strongly linked, although further study is required to delineate the specific pathways through which isolation impacts health.

Events, including changes in/loss of a social role, physical and mental health, social network, resources, and location of residence, can also trigger factors, both risk and protective, that can lead a person closer to or away from isolation.

6. There is a great deal of diversity among intervention designs, target populations, and outcome measures for interventions. The most common interventions reviewed in the literature fall into group and one-on-one categories and have been implemented with people living in community settings (as opposed to residential care settings). These interventions have aimed to:
 - Reduce loneliness and/or depression;
 - Increase social network size;
 - Improve quality of supports; and
 - Increase frequency of social contacts.
7. Validated measures of isolation include those that measure loneliness or social network composition and quality.



INTRODUCTION

Based on current estimates, isolation is a social problem that impacts as many as 17% of older Americans (Theeke, 2007; Walker & Gerbitter, 2005; Ortiz, 2011). AARP Foundation’s recent investigation into isolation established that there is considerable variability in how it has been defined and measured across disciplines and professional boundaries. Isolation in adults aged 50+ is a phenomenon that occurs within a complex array of contextual factors. Therefore, multiple disciplines examine and address these factors through their unique lenses. Subsections of the population experience isolation in different ways for different reasons. Factors including age (“young” old, old, and oldest old), physical and mental health status, ethnic and cultural background, geographic location, socioeconomic status, marginalization/exclusion, oppression, and prejudice/bias are all important to consider when taking a comprehensive approach to understanding isolation. To take a bold step in reducing isolation in aging adults and preventing its negative consequences, AARP Foundation has called for a comprehensive review and analysis of contemporary knowledge about isolation. This report presents an analysis and synthesis of this comprehensive review of multidisciplinary literature representing the many fields of study that touch on isolation and addresses ongoing research focused on isolation. A unifying definition of isolation along with an integrated conceptual framework for understanding isolation is proposed. Also reported is a summary of the most recent reviews of isolation-reducing interventions, current measures of isolation, and common intervention types.

PREVALENCE

Although a rough estimate of who is isolated can be achieved based on recent research, the following limitations affect the ability to confidently arrive at the prevalence of isolation in Americans aged 50+:

1. Variations in how isolation has been defined (e.g., loneliness or average social network size);
2. Variations in how isolation has been measured;
3. Variations in ages of populations studied;
4. Lack of specific focus on isolation in nationally representative samples with comparable definitions and measures; and
5. The condition of isolation itself: many people who are isolated are hard to reach, and it is therefore difficult to count them, let alone to better understand them (Klinenberg, 2005).

Due to these limitations, the process of becoming isolated and the reasons for isolation occurring among adults at risk remains unclear.

One of the underlying factors determining prevalence of people considered “isolated” is whether they live alone. According to a recent study by the National Council on Aging, an estimated 17% of all Americans over the age of 65 are isolated because they live alone and face one or more barriers related to geographic location, language, or disability. In addition, half of those older Americans are considered economically unstable (Ortiz, 2011). People who have limited income are considered to be more susceptible to isolation because they have limited resources to overcome barriers associated with isolation. Many researchers agree, however, that a solitary lifestyle alone is not an accurate indicator of isolation. A few studies have examined isolation in representative samples of older Americans. Theeke (2007) used a representative sample of older Americans to explore the relationship between loneliness and health. Isolation, defined as loneliness, was present among 16.9% of adults over 50 years old, 8.8% of which were considered chronically lonely. Cornwell, Laumann, and Schumm (2008) determined in a representative sample of Americans between the ages of 57 and 85 that the average network size was 3.6 people and that even after controlling for demographic variables, health status, and life-course stage, the older a person is, the more likely they are to have smaller networks, fewer primary network members, and more distant relationship ties. Although a higher prevalence of isolation may occur at older ages, certain adaptations, such as increased interactions with neighbors and friends or use of technology, could serve as protective factors.

Recent reports have looked to the U.S. Census to identify the percentage of seniors who may be at risk according to the other factors often associated with isolation (see Table 1). Percentages in Table 1 are based on a recent report by Walker and Herbitter (2005). According to the 2010 U.S. Census, there are 40,506,949 people over the age of 65 living in the United States. Table 1 reflects this estimate (Walker & Gerbitter, 2005; Ortiz, 2011).

Table 1: Percentage of People over the Age of 65 in the United States with Characteristics Related to Isolation Risk

| Characteristic | Percentage of People Aged 65+ in the United States | Number of People Aged 65+ in the United States |
|---|--|--|
| Divorced, separated, or widowed | 45% | 18,228,127 |
| Disabled | 42% | 17,012,919 |
| Living alone (non-institutionalized) | 28% | 10,936,876 |
| Income below poverty level | 10% | 4,050,695 |
| Speak English less than “very well” | 7% | 2,835,486 |
| Difficulty leaving home due to disability | 5% | 2,025,347 |
| Never married | 4% | 1,620,278 |

The prevalence of isolation has been explored internationally as well, with rates ranging from 2 to 20% among community-dwelling older adults (as opposed to those living in residential skilled settings). This research includes studies from the United Kingdom (Dickens et al., 2011; C.R. Victor, Bond, & Bowling, 2003; C.S. Victor, Scambler, & Bond, 2009), Australia (Findlay & Cartwright, 2002; Grenade & Boldy, 2008; Hawthorne, 2008), Canada (Kobayashi, Cloutier-Fisher, & Roth, 2009), and Finland (Tilvis et al., 2011). Some research in the United Kingdom suggests that older people who live in low-income urban communities (Scharf et al., 2002), live alone, or have chronic mental or physical illness experience much higher rates of isolation (Victor, Bond, & Bowling, 2003; Victor, Scambler, & Bond, 2009).



**HOW DO WE UNDERSTAND
ISOLATION?**

MULTIDISCIPLINARY APPROACHES TO UNDERSTANDING AND ALLEVIATING ISOLATION

Isolation in adults aged 50+ occurs due to a complex set of circumstances and factors that exist at the individual, social network, community, and societal levels. Many disciplines have recognized isolation in middle to later years as a problem and have offered their unique input to addressing isolation through clinical practice, community approaches, and research. Such disciplines include sociology, psychology, social work, epidemiology/public health, gerontology, social neuroscience, medicine (including psychiatry, nursing, and occupational therapy), public policy, and urban planning. A review of the multidisciplinary literature has revealed that there is extensive overlap across disciplines in terms of how isolation among adults aged 50+ is defined and conceptualized. Table 2 summarizes various disciplines that have contributed to the current understanding of older adult isolation.

Table 2: Disciplines Addressing Older Adult Isolation

| Discipline | Primary Lens | Approach to Isolation in Older Adults (Response Types) |
|--------------------------------|--|--|
| Epidemiology/ Public Health | Social ties and circumstances | Determine how multiple systems intersect to lead to isolation and how this impacts health and quality of life (Research and Practice) |
| Gerontology | Processes of aging | Study transitions (physical, mental, social) unique to later life that could lead to isolation (Research and Practice) |
| Medicine | Physical and mental decline and disease | Determine how isolation relates to health conditions (Research and Practice) |
| Nursing | Physical decline and disease; social/psychological components | Evaluate how isolation relates to health risks and determine how to assess isolation and manage it in a plan of care (Research and Practice) |
| Occupational Therapy | Functional decline and changes | Address functional limitations that lead to inability to participate in activities of daily living, applying adaptations to functional limitations (Research and Practice) |
| Psychiatry | Physiological, psychological, and mental health | Determine the psychological impact of isolation on cognitive function (Research and Practice) |
| Psychology | Cognition and motivation | Study motivation to interact with others, cognitive and affective issues (both as antecedents and consequences), and psychological benefits and detriments of interacting with others (Research and Practice) |
| Public Policy | Public policies related to aging issues: health care, long term care, public services accommodating/addressing aging issues, social inequality | Review how policies/trends impact isolation, taking into consideration societal issues such as value of independence in American culture and ageism (in other countries, the concept of social exclusion vs. social inclusion is also relevant to study) (Research and Practice) |
| Religion | Spiritual well-being | Attend to vulnerable and isolated community members (Practice) |
| Social Work | Environment systems | Study psychological/social circumstances around isolation and use multiple systems to address the problem (Research and Practice) |
| Social Neuroscience | Neurological and biological factors | Study neurological effects that lack of social stimulation and perceived isolation can have on biological processes (Research) |
| Sociology | Social trends and social processes | Study social factors surrounding the occurrence of isolation, mapping social networks and social contacts (Research) |
| Urban Planning | Built environment; livable communities | Facilitate accessibility of built environment (walkability, safety, transportation, local inclusive events) (Research and Practice) |

CONCEPTS FOR UNDERSTANDING ISOLATION IN ADULTS AGED 50+

Isolation has been examined through various conceptualizations in an effort to explain what isolation is and how it happens. This section synthesizes the most important, well-developed, and widely studied concepts that influence the current understanding of isolation, upon which a unifying definition of isolation can be built. Isolation is often delineated as subjective or objective (though these two categories are not mutually exclusive):

- **Subjective isolation** refers to how an individual perceives his or her experience and whether or not he or she feels isolated.
- **Objective isolation** is a quantifiable status that can be determined outside of an individual's perception.

Table 3 shows how these concepts are typically positioned into the two categories of subjective and objective isolation.

Table 3: Subjective Versus Objective Isolation

| Subjective Isolation | Objective Isolation |
|---|---|
| Sense of loneliness, quality of relationships with network, quality of social support, sense of belonging, meaningful social engagement, neighborhood and social cohesion and capital | Size and structure of social network, type and amount of social support, frequency of contacts with network, amount of participation in social activities, conduciveness of built environment to maintenance of social connectivity |

Individual-Level Concepts

Loneliness: Extensive work has been done to further define the concept of loneliness, which is categorized as subjective isolation. Loneliness has been much more clearly and consistently defined than measures of objective isolation. Cacioppo and his colleagues, who have studied the topic extensively, believe strongly that meaningful social connection is an inherent need that all human beings have. Loneliness, occurring in the absence of these meaningful social connections, is alleged to be one of the most significant negative consequences of isolation that has the potential to impact health in many ways (Cacioppo, Fowler, & Christakis, 2009; Cacioppo & Patrick, 2008; Hawkley, Browne, & Cacioppo, 2005; Hawkley et al., 2008). Loneliness has been a very popular way to conceptualize isolation in the research community across disciplines (Biordi & Nicholson, 2009; Grenade & Boldy, 2008; Victor, Scambler, & Bond, 2009). Researchers liken loneliness to the social equivalent of physical pain; it motivates lonely people to alleviate the suffering it causes (Masi et al., 2011). Although depression and loneliness are often correlated in some studies of older adults, other researchers have determined that loneliness is a construct independent of depression (Cacioppo, Hawkley, & Thisted, 2010). It has also been suggested that loneliness as a concept separate from isolation as it relates to social networks (Girona & Lubben, 2002).

Social Network-Level Concepts

Social Networks: Isolation, specifically in later life, is often identified and understood through a social network perspective (Biordi & Nicholson, 2009; CITRA, 2007; Cornwell & Waite, 2009; Nicholson, 2009). Social networks are interconnected webs of relationships in which people are naturally embedded. This concept has long been used to better understand how social interactions can impact health and quality of life throughout a person's life. Social networks have been used to measure both objective and subjective isolation. Understanding the structure of interpersonal social networks has provided effective methods with which to explore social support, stress, health, and health care issues (Hall & Wellman, 1985). Isolation has been operationalized in terms of social networks, perhaps most notably in a recent study finding a reduction of network ties in a nationally representative sample (McPherson, Smith-Lovin, & Brashears, 2006). Many researchers have pursued a better understanding of how social ties can impact health and quality of life in later life by viewing individuals as being rooted in social networks (Berkman et al., 2000; Crimmins, Preston, & Cohen, 2001; Kroenke et al., 2012; Luggen & Rini, 1995; Smith & Christakis, 2008). Social networks, depending on their type and quality, could serve as risk factors for well-being (Litwin & Shiovitz-Ezra, 2011; Wells, 2009).

Social Supports: “The absence or weakness of the social support network forms the basis for identifying individuals who are socially isolated” (Berg & Cassells, 1992). Social supports are psychological and material resources that help people adapt to change and cope with stress. The types of support fall into three categories: instrumental (e.g., financial, housework, or transportation assistance), informational (e.g., advice about a purchase or guidance with health systems), and emotional (e.g., expressions of empathy, caring, or trust) (Cohen, 2004; House et al., 1985; Tomaka, Thompson, & Palacios, 2006). Access to social support is found through members of one’s social network. Different types of relationships (e.g., partner/spouse, other family, friends, co-workers, formal/professional support) provide different types of social supports to adults in later life (Tomaka et al., 2006). The adequacy of social supports (the type, amount, and quality) provided by one’s support network are more important than the number of members a person has in his or her social network (Brissette et al., 2000; Cloutier-Fisher, Kobayashi, & Smith, 2011; Walker & Herbitter, 2005). The quality of the relationship with the people providing supports is also an important factor in determining whether social supports are adequate (Walker & Herbitter, 2005). Social support and isolation are closely linked because the absence or lack of adequate social support is a primary negative consequence and/or cause of isolation. (Cornwell & Waite, 2009; Drentea et al., 2006; Emlet, 2006; Grocki, 2009; Hall & Wellman, 1985; Krause, 1991, 1999; Kroenke et al., 2012; Masi et al., 2011; Nicholson, 2009; Reed et al., 2011; D. Russell & Taylor, 2009; Tomaka et al., 2006; Turner & Brown, 2010; Wortman & Conway, 1985).

Social Engagement and Integration: Social engagement in meaningful activities is central to healthy aging and is also a key aspect of isolation (Eakman, Carlson, & Clark, 2010; Power et al., 2007). In his investigation of a conceptual understanding of social isolation in adults aged 50+, Nicholson identified engagement as a central theme. Not maintaining close personal relationships and seldom seeking out others with whom to engage in social activities were manifestations of isolation (Nicholson, 2009). “Well-being appears to be considerably enhanced for those who are highly engaged (not just involved) in activities. The depth of engagement may be even more consequential for well-being in later life.” (James et al., 2012). Many researchers have provided evidence of the benefits of social engagement in later life (Hinterlong, Morrow-Howell, & Rozario, 2007; Hong & Morrow-Howell, 2010; James et al., 2012; Seeman, 1996). Social integration occurs when a person is involved in a wide range of social relationships and when a person feels a strong sense of identity with his or her role (Brissette, Cohen, & Seeman, 2000). Participating in multiple roles and activities in life and accepting social support when the need arises can have a positive impact on health and quality of life (CITRA, 2007; Lee, et al., 2008; Pillemer et al., 2000).

Community/Built Environment-Level Concepts

Community Environment: Many researchers have examined a person’s environment to understand social problems (Balfour & Kaplan, 2002; Cagney et al., 2009), and environmental factors can be particularly useful in understanding isolation (Grenade & Boldy, 2008; King, 2006; Krause, 1993). The most obvious environmental aspect that is vital to how isolation happens in many cases (although not as frequently cited in the isolation-focused literature) is the way one’s built environment impacts a person’s ability to have and maintain healthy social connections. Physical aspects like lack of transportation, proximity to health and social resources, and “walkability” of neighborhoods can have an impact on resident behavior relevant to isolation (Kihl et al., 2005; King, 2006; Mendes de Leon et al., 2009). Another concept that is important to the discussion of isolation is subjective perception of community. King (2006) explored concepts such as social cohesion and social capital to understand how isolation happens in later life. Social cohesion is the neighborhood-based resource of mutual community trust and solidarity. Social capital is essentially an appraisal of the social resources people can access in their community that can improve their quality of life (King, 2006), although it is measured across individual to societal levels. The absence or lack of accessibility of such community factors is clearly relevant to how isolation can happen in adults aged 50+. King found that neighborhood measures of social capital had an indirect influence on individual subjective and objective measures of isolation, mediated by perceptions of safety and social cohesion (King, 2006). Another study found that perceived neighborhood cohesion was associated with an objective measure of isolation, including larger networks of family, neighbors, and friends (Windsor, Fiori, & Crisp, 2011).

Societal-Level Concepts

Broad societal factors such as ageism, racism, sexism, homophobia, and political disenfranchisement are also relevant to understanding the phenomenon of isolation in mid to later years (Berkman et al., 2000). Such societal factors can influence an individual's personal experiences and access to resources. This perspective is recognized by multiple disciplines in research and practice; however, a specific review of how these broad societal factors intersect with isolation and major concepts relevant to isolation is beyond the scope of this phase of the project.

INTEGRATED CONCEPTUAL FRAMEWORK

Broad social structure, environmental and social aspects, and individual psychological, cognitive, and behavioral factors interact to impact health and quality of life in aging adults. The conceptual framework developed for this project is based on understanding how isolation can occur and isolation's impact on health and quality of life. When the intensity of the impact of risk factors overcomes the intensity of the impact of any protective factors, a person becomes more at risk for isolation. This is due to the fact that the impact of risk factors will diminish one's social connectedness. Risk factors may include a diminishment of health, or they may lead to a diminishment of health. The same holds true for social connectedness and quality of life. When social connectedness diminishes and when health and quality of life diminishes, a person becomes isolated.

UNIFYING DEFINITION OF ISOLATION

Isolation has been defined and measured in two primary ways: subjective (e.g., perceived isolation, loneliness) and objective (e.g., size of social network, frequency of social contacts). The five examples below illustrate the variety of definitions currently in use for isolation:

- "Social isolation is the distancing of an individual, psychologically or physically, or both, from his or her network of desired or needed relationships with other persons. Therefore, social isolation is a loss of place within one's group(s)" (Biordi & Nicholson, 2009). Biordi and Nicholson (2009) go on to explain that the North American Nursing Diagnosis Association's nursing diagnosis of isolation examines the following four characteristics: insecurity in social situations, a lack of meaningful relationships, expressed feelings of rejection, and a desire for contact with more people (also in Carpenito-Moyet, 2006). [*Subjective*]
- "The psychological construct of loneliness, which consists of feelings of social isolation due, in part, to the discrepancy between an individual's desired and actual relationships", primarily using the UCLA Loneliness Scale, "as a measure of general loneliness and degree of satisfaction with one's social network." (Cacioppo et al., 2002). [*Subjective*]
- "Social isolation typically refers to objective physical separation from other people, such as living alone or residing in a rural geographic area." (Tomaka et al., 2006). Tomaka et al. also include the concept of belongingness in their definition of isolation. [*Objective and Subjective*]
- "Social isolation has been defined as physical separation from other people or as perceived social isolation, even if others are present" (Sabir et al., 2009). [*Objective and Subjective*]
- "*Social disconnectedness* can be characterized by a lack of contact with others. It is indicated by situational factors, like a small social network, infrequent social interaction, and lack of participation in social activities and groups. Perceived isolation, on the other hand, can be characterized by the subjective experience of a shortfall in one's social resources such as companionship and support. Feelings of loneliness and not belonging, for example, indicate a perceived inadequacy of the intimacy or companionship of one's interpersonal relationships compared to the relationships that one would like to have." (Cornwell & Waite, 2009). [*Objective and Subjective*]

Based on this review of the multidisciplinary literature, it is equally important to attend to both the objective and subjective states of isolation, as they both have important consequences and are intertwined in the manifestation of isolation. The following definition of isolation synthesizes the critical components of isolation and is measurable:

Isolation is the experience of diminished social connectedness stemming from a process whereby the impact of risk factors outweighs the impact of any existing protective factors. A person's lack of social connectedness is measured by the quality, type, frequency, and emotional satisfaction of social ties.

How Do We Understand Isolation?

Social isolation can impact health and quality of life, measured by an individual's physical, social, and psychological health; ability and motivation to access adequate support for themselves; and the quality of the environment and community in which they live.

Why is defining isolation as either subjective or objective an insufficient approach? A simple subjective definition, such as honing in on the state of loneliness, could narrow the focus of targeted research efforts, making it easier to determine causes and consequences of isolation. In that same vein, exclusively objective measures of isolation could also make way for a bare bones approach to understanding, measuring, and impacting isolation. Evidence suggests that understanding isolation in both subjective and objective terms is important, and a distinction in the type(s) of isolation that an individual experiences is significant. Negative consequences of isolation could differ depending on whether subjective, objective, or both types of isolation are experienced. For example, the pathway from isolation to a negative consequence, such as depression from chronic loneliness, is different than the pathway to insufficient health care via a lack of sufficient social support, such as transportation.

The background features a dynamic, abstract design with flowing, wavy lines in various shades of orange and red. The lines are layered and overlap, creating a sense of movement and depth. The colors transition from a bright orange at the top to a deeper red at the bottom.

**WHAT ARE THE RISK FACTORS,
CAUSES, AND CONSEQUENCES OF
ISOLATION?**

Table 4 contains a list of prevalent risk factors that integrates numerous sources and covers several subpopulations and contextual situations. Factors relevant to isolation in later life are broad and exist at individual, community, and societal levels. Table 4 presents a summary of findings: a list of risk factors most prevalent in a review of the literature. It is important to note that these risk factors are not mutually exclusive and any one factor may not lead directly to isolation. Several risk factors can occur simultaneously to result in isolation and to further the negative consequences occurring for an isolated individual. For example, if someone has lived alone for many years independently, he/she may not necessarily be at risk for isolation. However, if that same person experiences a health problem that limits his/her mobility, and his/her social network does not contain people who can provide adequate support to keep him/her engaged socially or to give him/her access to regular health care, then the risk is quite high that he/she will become isolated and experience negative consequences.

Table 4: Risk Factors

| Risk Factor | Individual | Community | Societal |
|--|------------|-----------|----------|
| Living Alone | ✓ | | |
| Having Impaired Mobility (physical, poor sensory functions) | ✓ | | |
| Experiencing a Major Life Transition (loss of partner/spouse or other primary network members, employment, or resources in general) | ✓ | ✓ | |
| Having Low Income (limited resources) | ✓ | | |
| Being a Caregiver (for someone with a severe chronic disability or illness) | ✓ | ✓ | |
| Having Psychological or Cognitive Vulnerabilities (depression, low self esteem, compromised self-efficacy, addiction) | ✓ | | |
| Living in a Rural Location | | | ✓ |
| Having Neighborhood/Community Limitations (inaccessible, lacking meaningful events, and/or unsafe) | | | ✓ |
| Having a Small Social Network and/or Inadequate Social Support | | ✓ | |
| Speaking a Language Other Than English | ✓ | | ✓ |
| Belonging to a Minority Group (an ethnic and/or racial minority group, the LGBTQ community, or a religious or other cultural minority group) | ✓ | | ✓ |

The most prominent individual-level risk factors for older adults seen repeatedly in the literature are: living alone, having a physical impairment, losing a partner and/or close friends, and losing an important role such as employment (CITRA, 2007; Cornwell & Waite, 2009; Findlay, 2003; Findlay & Cartwright, 2002; Walker & Herbitter, 2005). Other factors are: having a small social network and having poor-quality social relationships (Hawkley et al., 2008). Risk factors at the community level include: lacking or having limited opportunities for social interaction and access to resources (this is influenced by personal navigability of physical surroundings); having access to transportation (public or one’s own); feeling safe to leave one’s home; and having local events conducive to meaningful activities (as defined by the older person) (Cornwell & Waite, 2009; Findlay & Cartwright, 2002; King, 2006; Rosenbloom, 2009). Societal-level risk factors to be considered are having ageism, racism, sexism, or homophobia, which create a socially toxic environment (Findlay & Cartwright, 2002; Kawachi & Kennedy, 2002; Klinenberg, 2005). The following sections summarize evidence found in a general review of the literature that connects the list of risk factors in Table 4 to specific contexts relevant to isolation.

Impairment

Having physical mobility and sensory impairments can easily lead to isolation if transportation or other instrumental support is not readily accessible. Perhaps the best example of a physical cause of isolation is the lack of transportation options for those who are unable to drive or are uncomfortable driving. Several studies have identified older adults with chronic illness who express how a lack of transportation has been a barrier to self-care (Biordi & Nicholson, 2009; Cudney et al., 2002; FitzGerald, Pearson, & McCutcheon, 2001; Letvak, 1997; Mukherjee, Reis, & Heller, 2003). Physical

impairment, regardless of transportation access, can also be an isolator for individuals who are unable to physically engage in and manipulate their environment. For people with physical impairments, a lack of adaptive tools and technical support can be an enormous barrier to social interactions (Clark et al., 2011; Webber, Porter, & Menec, 2010).

Physical health, including self-rated health status, and chronic illness are risk factors for becoming isolated (Grenade & Boldy, 2008; Victor et al., 2003). Higher levels of isolation have also been associated with lower physical activity (Reed et al., 2011). The functional limitations that often accompany chronic illness can clearly be a barrier to being able to perform activities that allow independent living (Biordi, 2002; Cudney et al., 2002; Fitzgerald et al., 2001; Sullivan et al., 2003; Tanner, 2004). The circumstances of “decreased mobility, less energy, fatigue, and pain lead to diminished social contacts through fewer outings outside of the home. Being secluded and homebound is a common reality for the chronically ill” (Holley, 2007).

Socio-Economic Status

Living in impoverished communities and having a limited amount of resources can make a person more susceptible to experiencing isolation. “Low-income, older persons are significantly more likely to have lost a loved one or close friend, be burdened by extensive caregiving demands for someone else, be more socially isolated, and live in lower quality housing” (Evans et al., 2008). Seniors who reside in low-income neighborhoods are particularly susceptible to the harmful impact of isolation (Klineberg, 2005). Wen et al. examined objective measures of socio-economic status (SES) and subjective neighborhood perceptions and measures of social isolation in middle age and older adults. The way loneliness can impact health is through individual SES, perceptions of neighborhood quality, and psychosocial status (Wen, Hawkey, & Cacioppo, 2006).

Location

Location has been cited as an obvious risk factor related to isolation, particularly for people living in rural or urban areas that have limited resources. Urban areas that are unsafe and perceived to be inaccessible have been linked to isolation in several studies (King, 2006; Klinenberg, 2005; Scharf et al., 2002; Walker & Herbitter, 2005). People who live in rural areas are at higher risk for isolation due to a lack of resources, opportunities for social interactions, and access to public transportation (Biordi, 2002; Cudney et al., 2002; Dugan & Kivett, 1994; Fitzgerald, Pearson, & McCutcheon, 2001; Sullivan, Weinert, & Cudney, 2003; Weinert, Cudney, & Winters, 2005). Living in a suburban area and losing the ability to drive can also put a person at risk of becoming isolated (DeGood, 2011). Rosenbloom (2009) explored the reality of transportation needs for our aging society and concluded that the United States is grossly unprepared to accommodate future transportation needs. An AARP Public Policy Report indicated that the transportation needs of adults over the age of 50 will demand that improvements be made to existing transportation systems (Rosenbloom & Lynott, 2011).

Klineberg identified four significant conditions through which urban isolation occurs in the United States: 1) aging of the urban population—chiefly seen as increases in the number of Latino, African American, and Asian seniors; 2) fear of crime and violence; 3) dreadful conditions in public spaces and residential facilities that seniors frequent; and 4) changes in formal services and support systems (health care, public or subsidized housing, home energy subsidies). “The interaction of these conditions with poverty and the daily deprivations it entails renders poor seniors who live alone vulnerable to a variety of dangers whose consequences can be severe” (Klineberg, 2005).

Bowling and Stafford (2007) found that neighborhood perceptions were associated with older members’ social activities and frequency of social contacts with others as well as physical functioning (all objective measures of social connectivity). Mendes de Leon et al. (2009) confirmed what many other researchers have found: walking behaviors (objective sign of social integration) of community-dwelling adults over the age of 50 were negatively impacted by being in neighborhoods that felt unsafe and appeared neglected.

Mental Health

Based on a review of the literature, depending on the circumstances, cognitive processes and psychological and affective states could be both antecedents and consequences of isolation. Social ties and mental health have been strongly linked across disciplines (Kawachi & Berkman, 2001; Turner & Brown, 2010). Vulnerability to loneliness has been associated with poor mental health (Victor et al., 2003). Two examples of psychological components relevant

to isolation are depression and self-efficacy. Depression is a psychological state that has been closely linked to isolation, particularly subjective isolation such as feelings of loneliness and a lack of belonging. Depression is both an antecedent and a consequence of subjective isolation (Barg et al., 2006). Higher rates of depression exist among those who are socially isolated (Prince et al., 1998). Self-efficacy is a marker of an individual's confidence in his or her own competence to perform tasks and reach goals (Bandura, 1982). An older adult's self-efficacy could predict his or her ability to counteract the objective aspects of isolation, such as physical participation in community activities or engagement in new or existing relationships (King, 2006). Self-efficacy has also been found to be a predictor of loneliness (subjective isolation) among older adults (Fry & Debats, 2002). Some research has associated social isolation with higher rates of mental health issues and subsequent substance abuse in older adults (Gossop & Moos, 2008; Han et al., 2009; Smith, & Rosen, 2009).

These are only some of many potential psychological and cognitive aspects that are relevant to isolation. These and many other psychological factors, depending on the individual, can put a person at risk of, or serve as a protective factor against, isolation. Adequacy of psychological coping skills, for example, would be a crucial protective or risk factor for isolation for a person who has experienced a dramatic loss of mobility. An exhaustive list of potential psychological states that could be related to isolation is a separate project; however, it is a critical aspect to understanding causes of isolation. Mental health issues, whether they are chronic, long-term issues, or new mental health changes that impact a person's affective or cognitive function, can play an important role in who experiences the negative consequences of isolation and who does not.

Caregiving

Informal caregivers, primarily family and, in some cases, friends, are considered to be the backbone of the long-term care system, and 49% of all caregivers (out of an estimated 65.7 million unpaid caregivers in the United States) are over the age of 50 (NAC & AARP, 2004). Caregivers, particularly those who care for people living with chronic illness, have been identified in the literature as a group at risk of becoming isolated. People who care for family members with Alzheimer's disease are particularly susceptible to isolation (Drentea et al., 2006). The reduction in opportunities within which to maintain a social network and engage in activities due to caregiving demands can, in many cases, lead to isolation. However, it is important to note that just the act of being a caregiver is not necessarily predictive of social isolation. Simultaneous factors like whether or not the caregiver lives with the person needing care, the severity of illness of the care-receiver, and access to support are important. Robison et al. (2009) found that there were not significant differences overall in the likelihood of being socially isolated between caregivers and non-caregivers but that caregivers who lived with a family care-receiver were 2.5 times as likely to experience isolation. Those who had unmet long-term-care-services needs were 4 times as likely to be isolated (Robison et al., 2009). Vitaliano, et al. (2011) found isolation, among other factors, to be intermediary in caregiver cognitive decline (Vitaliano et al., 2011). Ploeg et al. (2001) identified perceived support needs of family caregivers to inform a telephone support intervention. The needs most highly noted were those that would assist the caregivers in engaging in a more successful social life, as well as instrumental support (physical and financial assistance), informational support (on disease progression and resources), and emotional support (how to deal with frustration and loss) (Ploeg et al., 2001).

Race and Ethnicity

Isolation can happen differently and at different rates depending on racial- and ethnicity-related factors. Five studies were identified in a general search for isolation in later life (not a search specific to race or ethnicity). These studies provide evidence to suggest that isolation and its negative consequences may look differently for different racial and ethnic groups. Locher et al. (2005) examined associations between social isolation, social support, social capital, and nutrition in African American and white women and men over the age of 65. They found that "Black women were most likely to be socially isolated and to possess the lowest amounts of social support and capital. This relationship held across all measures and was statistically significant in regard to not having a reliable source of transportation (22.1%), to being limited in life-space to the room where one sleeps (24.9%), to limiting activities for fear of an attack (30.5%), and to not being married (79.5%)." In a study of African-American and white older Americans, social isolation was found to increase likelihood of a drop in blood pressure. African Americans were the most isolated individuals (Troxel et al., 2010). Russell and Taylor (2009) found that living alone is related to greater rates of depression among Hispanic older adults but not for non-Hispanics.

Older immigrants are a subpopulation at risk of isolation. Many times older parents are brought to the United States by their children who are legalized citizens. These older individuals may or may not have a command of the language and most likely are not familiar with the culture. Very often, they also are relied upon for childcare, cleaning, and cooking, which can monopolize their time and give limited opportunities for developing social relationships outside of the family (Treas, 2008). Treas and Mazumdar (2002) built on previous research that older immigrants often experience isolation. Their qualitative research confirmed this and further found that even though older immigrants live with their families, they are often dissatisfied with the level of companionship and social interaction that their families have time and energy to provide. They also concluded that, “difficulties that older immigrants face cannot be attributed just to the immigrant experience nor to the distinctive cultural traditions that they embrace. Although geographic separation from coethnics or linguistic isolation may exacerbate their difficulties, the organization of family life can impose a burden of loneliness on the elderly who lack other social resources.”

These five studies are evidence that research is being conducted to connect race and ethnicity to isolation. However, this is not intended to be exhaustive; further review of the literature into all contexts and concepts relevant to isolation and race and ethnicity is beyond the scope of this project.

Sexual Orientation and Gender Identity

Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ) seniors are identified as a group at risk for isolation (Addis et al., 2009; Wallace et al., 2011). Members of the LGBT community over the age of 50 are more likely to be single and live alone (Fredriksen-Goldsen et al., 2011). In addition, a variety of reasons suggest that these individuals may be at higher risk of experiencing negative consequences of isolation:

LGBT older adults are twice as likely to live alone as heterosexual older adults and more than four times as likely to have no children, meaning that the informal caregiving support structure we assume is in place for older adults might not be there for LGBT older people. For LGBT elders, social isolation compounds the physical and mental health concerns that many elders experience as they age. Research suggests that social isolation can lead to a number of mental and physical ailments such as depression, delayed care-seeking, poor nutrition, and poverty—all factors that greatly lessen the quality of life for both LGBT older adults and elders of color. Living in isolation, and fearful of the discrimination they could encounter in mainstream aging settings, many marginalized elders are also at a higher risk for elder abuse, neglect, and various forms of exploitation. For LGBT elders of color, this social isolation might be intensified, since they might also be isolated from their racial and ethnic communities as LGBT older people and isolated from the mainstream LGBT community as people of color. (Fredriksen-Goldsen et al., 2011).

Caregivers of partners in the LGBT senior community may face compounded risk related to less support from family members and fear of facing stigma and discrimination in the formal health and legal system (Fredriksen-Goldsen & Hoy-Ellis, 2007; Muraco & Fredriksen-Goldsen, 2011). Efforts are currently underway to counter the lack of aging research on the LGBT senior population and to better integrate LGBT seniors into public policy on aging (NAAS, 2011).

CAUSES

To gain a comprehensive view of how isolation happens in later life, contextual factors surrounding it have been reviewed, such as individual psychosocial states that play a role in isolation, as well as social factors such as social networks, social supports, social engagement and integration, income, mobility, societal factors, and the physical environment. It is also very useful to consider that each person has a different history and subsequent propensity for isolation depending on his or her behaviors and choices throughout life. For example, Biordo and Nicholson (2009) distinguished between voluntary and involuntary isolation and proposed a typology that identifies people as integrated (not isolated), as becoming isolated slowly over time, as being recently isolated due an acute event, and as being lifelong isolates. After a review of concepts and factors, it is clear that the causes of isolation are multifaceted and how isolation happens in late life is highly variable.

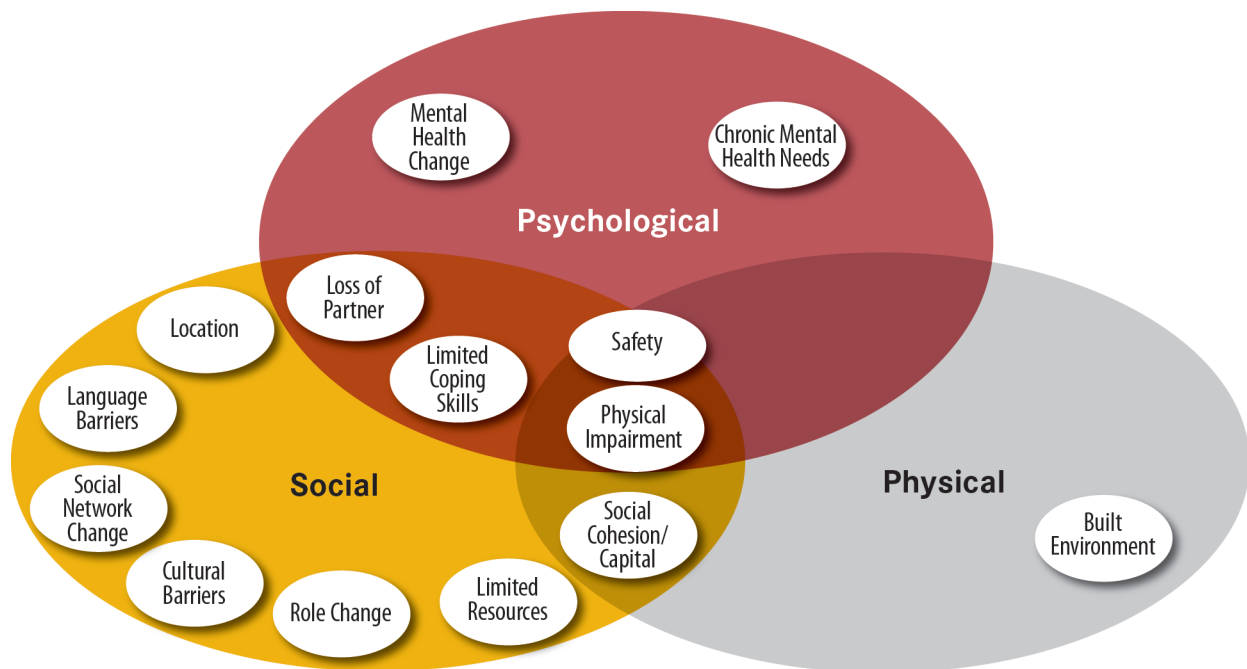
An approach to understanding causes of isolation is to consider events or circumstances that often lead to isolation. Table 5 presents events that can trigger a path towards isolation and examples of these events grounded in previous research.

Table 5: How Isolation Happens

| Potential Triggers of Isolation | Common Examples |
|---------------------------------|---|
| Major Life Transitions | |
| Change/Loss of Social Network | Death of spouse and/or close friends and family |
| Change/Loss of Role | Loss of employment—retirement or unplanned loss of job; moving to a new place |
| Change/Loss of Physical Health | Abrupt or gradual health decline |
| Atypical Events | |
| Change/Loss of Mental Health | Affective states or loss of cognitive function (dementia) |
| Change/Loss of Resources | Limited or no access to transportation; financial situation limits ability to travel or participate in activities |
| Social Circumstances | |
| Location | Rural/inaccessible or unsafe community setting |
| Language and Cultural Barriers | Relocation to live with/near children; marginalized groups |

One community nursing perspective about isolation lends a simplified approach to causes of isolation by categorizing them into physical, psychological, and social isolators (Fioto, 2002). Figure 2 illustrates how isolators including select risk factors, events, and circumstances are situated in these broader categories.

Figure 2: Isolators Situated in Physical, Psychological, and Social Realms



THE RELATIONSHIP AMONGST RISK AND PROTECTIVE FACTORS

Risk factors can sometimes be protective factors, depending on the circumstances. For one person, a low need for social interaction may be a protective factor because he/she is more resilient to changes that impact the size or quality of her/his social network, as long as overall they have adequate social connectedness and health and quality of life. For another person, a low need for social interaction may be a risk factor because it can result in a smaller social network

on which he/she can depend and perhaps a lower willingness/ability to lean on others for support. This may become problematic if he/she comes to suffer from a chronic disease and depression and lives in a community with few social supports.

Risk and protective factors can be described as above in psychological, physical, and social categories. There are also events or circumstances that impact a person along their life path. The effect can be on the individual, social network, community, and/or the societal level. Figure 3 illustrates some examples of risk and protective factors, and the type of factor they can be considered. This figure is meant to be illustrative, not comprehensive or exhaustive.

Figure 3. Categories and Areas of Impact for Risk and Protective Factors

| | Risk Factors | Protective Factors |
|----------------------|--|---|
| Events | Loss of Partner or Primary Relations (e.g. Close Friends and Family) | Coping/Adaptability |
| | Change or Loss of Role (e.g. Retire, Become Caregiver for Partner) | Coping/Adaptability |
| Psychological | Mental Health Challenges (Depression, Dementia) | Strong Mental Health |
| | Cognitive Barriers (e.g. Fear, Lack Self-Efficacy) | Coping/Adaptability, Access to Support |
| Physical | Impairment | Absence of Physical Impairment |
| | Chronic Illness (e.g. Degenerative Multiple Sclerosis) | Adaptive/Accessible Environment or Equipment, Access to Support |
| Social | Income/Inequality | Access to Support (formal or informal) |
| | Language/Cultural Barriers (e.g. Low English Skills) | Access to Opportunities for Safe Social Engagement, Coping/Adaptability |

THE RELATIONSHIP BETWEEN ISOLATION AND HEALTH

A strong link has been established between isolation and morbidity, and isolation is considered a risk factor in development of illness and impairments in the presence of illness (Berg & Cassells, 1992). The link between social relationships and health has been widely studied (Berkman, 1995; Berkman et al., 2000; Cohen, 2004; Ertel, Glymour, & Berkman, 2009; Ikeda & Kawachi, 2010; Seeman, 1996; Smith & Christakis, 2008). Cacioppo and his colleagues examined the mechanisms through which loneliness can impact health. In their study results and reviews of previous literature, they identified a long list of health conditions with which loneliness (subjective isolation) is associated (Cacioppo et al., 2009; Cacioppo & Hawkley, 2003; Cacioppo et al., 2002; Cacioppo, Hawkley, & Thisted, 2010; Cacioppo & Patrick, 2008). Additionally, research has found loneliness to be a predictor of depression (Cacioppo et al., 2010; Cacioppo et al., 2006), and suicidal ideation (Alpass & Neville, 2003; Fees, Martin, & Poon, 1999). In her study of loneliness in a sample of adults aged 50 and older, Theeke found that chronic loneliness was associated with higher numbers of chronic illness and higher depression scores, among other health-related issues (Theeke, 2007). Isolation has also been demonstrated to be predictive of cognitive impairment in older women (Crooks, Lubben, Petitti, Little, & Chiu, 2008).

Some studies have focused specifically on isolation conceptualizations (subjective and/or objective) in later life and link them with health outcomes. Examples of these include coronary disease (Eaton, et al., 2011; Eng et al., 2002), HIV/AIDS (Emlet, 2006), health-related quality of life (Hawton et al., 2010), rates of mortality from breast cancer (Kroenke et al., 2012), and hypertension (Shah & Cook, 2001). Isolation has also been associated with higher rates of

re-hospitalization (Mistry et al., 2001; Curtis et al., 2006). Tomaka et al. (2006) found both subjective and objective social isolation to be related to disease outcomes including diabetes, hypertension, arthritis, and emphysema. Evans et al. (2008) stated that risk exposures of isolation including likelihood of having reduced social networks could offer a major connection between income and health. Isolation resulting in lack of transportation can also have health consequences. A 2006 report from the Transit Cooperative Research Program of the Federal Transit Administration identified that 3.6 million Americans, a large portion of whom are older, low income, and minorities, have deferred or altogether missed routine medical care due to lack of transportation (Hughes-Cromwick & Wallace, 2006). In turn, such a trend could lead to higher national health care costs (Hughes-Cromwick, et al., 2005).

Berkman et al. (2000) propose a framework that illuminates the path from isolation to health through social networks:

We have identified five mechanisms by which the structure of social networks might influence disease patterns: 1) biological and psychological pathways proximate to health status, 2) health behaviors, 3) psychological mechanisms, 4) physiologic pathways, and 5) the social environment in adulthood. While social support is the mechanism most commonly invoked, social networks also influence health through additional behavioral mechanisms including: (1) forces of social influence; (2) levels of social engagement and participation; (3) the regulation of contact with infectious disease; and (4) access to material goods and resources. These mechanisms are not mutually exclusive. In fact, it is most likely that in many cases they operate simultaneously (Berkman et al., 2000).

Cornwell and Waite (2009) found an independent association between their two measures of isolation and health. Higher levels of social disconnectedness and perceived isolation were associated with lower levels of self-rated physical health. They also determined that there is a benefit to considering both of these dimensions simultaneously (Cornwell & Waite, 2009). Evans et al. (2008) confirmed in a sample of community-dwelling (non-institutionalized) older adults that there is a relationship between lower income and poorer health.



**ISOLATION-REDUCING
INTERVENTIONS**

Considering the heterogeneous nature of how isolation happens among different subpopulations, it is not surprising that the features of interventions to date that have targeted isolation vary significantly as well. Interventions designed to prevent or alleviate isolation in late life have been implemented on multiple levels, targeting various aspects of people's lives. Such interventions have generally fallen within these categories: one-on-one, group-focused, service provision, and community-based interventions. Goals of interventions range from using cognitive and/or behavioral approaches, to aiming to improve people's social networks, to building community and/or capacity (Grenade & Boldy, 2008). The following three sections will review intervention strategies identified in the literature that target isolation. The first section is a summary of recent reviews of empirically tested isolation-reducing interventions (See Appendix for more comprehensive details of these studies). The second section presents examples of specific interventions to illustrate the major components that various interventions have in common. The final section describes specific products that have the potential to prevent or alleviate isolation.

SUMMARY OF LITERATURE REVIEW OF TESTED INTERVENTIONS

By far, the most common interventions reviewed are those that fall into the one-on-one and group-focused categories and have been implemented with people living in community settings (non-institutionalized). There are approximately 100 different intervention studies that target the reduction of isolation (objective and/or subjective) represented in the reviews described below. Considering the wide variety of intervention types, target populations, and research designs covered in these reviews, 100 intervention studies addressing isolation worldwide is quite a small number. The current understanding of what interventions are most effective in alleviating either or both objective and subjective isolation is still limited. Therefore, it is difficult to recommend one intervention technique to be more effective over another in the general population. It has been noted in several reviews that group interventions appear to have been more successful than other intervention types, perhaps because of the social interaction component, but there is not enough information to be definitive about such a conclusion. Reviews support that effective interventions target specific groups, use representative samples of their target population, use more than one method of intervention (target more than one aspect), allow participants an element of control, include individual participation in intervention planning, and have facilitators who have adequate training and resources.

Important information to glean from these intervention studies is that it is extremely important to match appropriate interventions with people's unique circumstances, cause for being isolated, and whether they are experiencing objective, subjective, or both types of isolation. It is also important to be clear about what outcome or outcomes will be the target of such interventions. Future research that evaluates isolation reducing interventions should consider the unique circumstances for the target population when planning the recruitment processes, intervention type, and research design.

Intervention Studies

Findlay (2003) identified seventeen studies that focused on older people, featured interventions that targeted social isolation and/or loneliness, attempted to achieve a health benefit, and identified outcomes. Findlay was able to identify gains for participants from both one-on-one and group-focused interventions. However, it is important to note that there was considerable variation in the rigor of the study designs and how effectiveness was defined.

Cattan et al. (2005) conducted a review of health promotion interventions that targeted isolation and loneliness among older adults, and identified thirty quantitative outcome studies conducted in the United States and Canada.

Impact: Cattan et al. (2005) defined effective interventions as having significant reduction in loneliness and/or isolation. The most successful intervention programs involved groups that contained education pieces and/or specific activities and those that targeted specific groups such as caregivers, women, physically inactive people, widowed people, etc. Effective interventions also used representative samples. "The review suggests that educational and social activity group interventions that target specific groups can alleviate social isolation and loneliness among older people. The effectiveness of home visiting and befriending schemes remains unclear" (Cattan et al., 2005).

Outcome Measures Used in Studies: Approximately two thirds of all studies used loneliness as a main outcome measure. Among those were two validated instruments (UCLA Loneliness Scale and de Jong Geirveld Loneliness Scale). Some studies used measures of network size, social support, or coping style (these measures were not specifically listed).

Sabir et al. (2009) documented the feedback of practitioners and researchers in a Cornell Institute for Translational Research on Aging (CITRA) Research-to-Practice Consensus Workshop that focused on the findings of Cattan et al.'s 2005 review of interventions. Practitioners critiqued Cattan et al.'s main findings that the one-on-one interventions were largely ineffective. Practitioners pointed out the one-on-one interventions included in the Cattan et al. study focused on secondary medical interventions. Practitioners indicated that if one-on-one interventions were more person-centered and focused on relationship building, they would be more effective. Furthermore, practitioners pointed out that there are many circumstances in which one-on-one interventions targeting isolation would be the most appropriate for certain people. Finally, practitioners believed that researchers had too narrow of a focus when developing interventions. They perceive problems experienced by clients as being multi-factorial (suggesting that isolation may be only one aspect of several problems that have negative consequences) and that multi-focused or multi-systemic interventions might be more beneficial and effective for recipients of the intervention (Sabir et al., 2009).

Dickens et al. (2011) selected 32 studies to review that had a broad variety of intervention strategies addressing mental, physical, and social health. Interventions targeted one or more of the following: loneliness, social isolation, structural social support, functional social support, depression, mental well-being, and/or physical health.

Impact: Interventions that involved active participation, which “entailed active input from participants involving social contact (not necessarily face-to-face) rather than them simply being recipients of a service or education/training”, had 80% effectiveness versus the 40% of non-participatory interventions. Of the group interventions, 79% found improvement on at least one outcome as compared to 55% of the one-on-one interventions. Those interventions that specifically targeted socially isolated individuals were less likely to be effective. The types of interventions found to be most effective were activities or support interventions (counseling, therapy or education). “Our systematic review has identified a need for well-conducted studies to improve the evidence base regarding the effectiveness of social interventions for alleviating social isolation. However, it appeared that common characteristics of effective interventions may include having a theoretical basis and offering social activity and/or support within a group format. Interventions in which older people are active participants also appeared more likely to be effective” (Dickens, et al. 2011).

Outcome Measures Used in Studies: Twenty-two of the 32 studies used validated outcome measures and three used partially validated measures. To measure subjective isolation (loneliness or perceived isolation), the majority of studies used a loneliness scale (most used a form of the UCLA or the de Jong Geirveld Loneliness Scale) or a measure of satisfaction with interaction with members of one's social network/social supports. Objective isolation was measured using some type of social network index or a count of the number of members in a person's network and participation/engagement in some form of social activities. See Table 9 for a complete list of measures used in the studies Dickens et al. reviewed.

Masi et al. (2011) conducted a meta-analysis of 50 studies in which the interventions aimed at reducing loneliness (subjective isolation). The goal of their review was to determine quantitatively if loneliness outcomes were different depending on study design, intervention type, or other aspects of the study.

Impact: There were indications of at least some effectiveness in reducing loneliness in all design and intervention types. Effect sizes for reducing loneliness were larger in the single group pre-post and non-randomized group comparison designs; however, Masi et al. pointed out that such designs have flaws that could produce bias (e.g., sample selection or instrumentation) in these results. Therefore, they heed results of the randomized controlled trials (RCT) with higher attention. Based on their findings from RCTs, those therapies focusing on social cognitive interventions (e.g., Cognitive Behavioral Therapy) had a small

but significant effect in reducing loneliness, more so than that of the other intervention types. Although interventions involving technology resulted in higher efficacy in nonrandomized studies (which have a selection bias), technology did not appear to have the same effect in RCT studies, suggesting that the advantage of using technology interventions to reduce loneliness may not exist for the general population of older adults.

Outcome Measures Used in Studies: The majority of studies in this review used some form of the UCLA Loneliness Scale or the de Jong Gierveld Loneliness Scale. Other studies used a scale specifically created to measure the concept of loneliness.

TYPES OF INTERVENTIONS

Intervention types can be placed in the broad categories of one-on-one (professional or volunteer), group-focused (support groups, participation in group activities), or community-focused (village model, intergenerational intentional communities, modifying built environment). Policy change has also been a focus of several practitioners and researchers reflecting the fact that societal structures can also influence the incidence of isolation. Examples of policies that have been adopted in other countries illustrate the impact that policy may have on isolation (e.g., Campaign to End Loneliness, 2011). For example, in the United Kingdom, bus passes are free to older citizens and recently the government adopted a public health intervention approach to assist older adults with adapting to functional limitations.

Interventions that incorporate technology can be found across categories of intervention types but are particularly used in one-on-one interventions (providing telephone support, emailing with friends and family, facilitating communication or coordination of support with social network) and group interventions (virtual senior center, discussion group sessions held online).

In addition to the type of intervention, considering the specific target population and intended outcomes is critical. Most commonly targeted in terms of subjective isolation are loneliness and quality of relationships with social networks. Interventions targeting objective isolation often focus on size of social network (primary and secondary), frequency of interaction with contacts, and participation in socially engaging activities. Other interventions have a more comprehensive intention, such as teaching skills that help people who have low mobility adapt and use supports that promote independent living but which could also prevent and alleviate negative consequences of isolation.

Table 6: Examples of On-on-One Interventions

The first seven of the one-on-one interventions involve professionals providing a service; the last two are programs for teaching computer technology skills.

| Name of Intervention | Description | Source |
|--|---|------------------------|
| One-on-One | | |
| Caregivers Telephone Support | Experienced family caregivers provided phone support to new family caregivers. Weekly phone calls provided information, affirmation, and emotional support. Qualitative evaluation documented improved satisfaction with support, coping skills, caregiving competence and confidence, and decreased burden and loneliness. | Stewart et al., 2006 |
| Home Visiting | Volunteer visitor program, clients' home. Weekly 3 hour visits, for 6 weeks. Activities were mutually agreed upon. | MacIntyre et al., 1999 |
| Care to Homebound Seniors | House call program, doctor visits to homebound seniors (this example was not targeted specifically to reduce isolation, rather to serve health needs of isolated seniors) | Friedrich, 2008 |
| Telehealth Intervention for Homebound Older Adults | "Honeywell "HomMed" Health Monitoring System (HomMed, 2011), which consists of a small, tabletop in-home monitor and a Central Station located at the home health care agency." | Gellis et al., 2012 |

| Name of Intervention | Description | Source |
|--|--|---|
| Creative and Social Activity - Mentoring Program | “The Upstream Healthy Living Centre is a community-based intervention operating on an outreach basis. Mentors work closely with participants, aiming to re-ignite their passion and interest in life by engaging in participant-determined programs of creative, exercise, and/or cultural activities, with an emphasis on social interaction. The intervention is individually tailored to suit each participant’s own interests and passions.” | Greaves & Farbus, 2006 |
| Community-integrated Home-based | Program to Encourage Active, Rewarding Lives for Seniors (PEARLS). “The PEARLS intervention consisted of problem-solving treatment, social and physical activation, and potential recommendations to patients’ physicians regarding antidepressant medications.” | Ciechanowski et al., 2004 |
| Enhancing Self-Care in Community-Dwelling Older Adults | Program located at a housing complex: “At this facility, a community health nurse is available daily and an Adult Nurse Practitioner is available 8 hours a week at the Wellness Center, located on the main level of the apartment building. The purpose and mandate of the center is to provide ongoing health monitoring and enhance quality of life by helping older adults manage chronic conditions.” | Gerson et al., 2004 |
| SeniorNet | SeniorNet’s mission is to provide older adults education about and access to computer technologies to enhance their lives and enable them to share their knowledge and wisdom. | http://www.seniornet.org/ Findlay, 2003 |
| U3A Online | U3A Online is the world-first virtual University of the Third Age delivering online learning via the Internet. All that’s needed to study online is access to a computer with an Internet connection—and some basic computing skills. U3A Online offers many other useful resources for older people, especially those who are geographically, physically or socially isolated. | http://www.u3aonline.org.au/ Findlay, 2003 |

Table 7: Examples of Group-Focused Interventions

These three group-focused interventions are each unique: the first is a technology product and program, the second is an occupational therapy intervention to facilitate independent living, and the last is an intervention designed to engage older individuals in specific volunteer activities.

| Name of Intervention | Description | Source |
|-----------------------|--|--|
| Group-Focused | | |
| Virtual Senior Center | “The home of each participating older adult is equipped with the following: a desktop computer running the Windows 7 operating system; a large touch-screen monitor; a small video camera (“videocam”) and microphone; assistive technology as needed, such as adapted keyboards, screen readers, or trackballs (pointing devices); broadband Internet service; a custom interface, developed by Colorado-based It’s Never 2 Late, that allows two-way communication between the participant and venue.” | Larkin, Lerner, & DeCrow, 2010 |
| Lifestyle ReDesign | “... lifestyle-based occupational therapy intervention, administered in a variety of community-based sites, in improving mental and physical well-being and cognitive functioning in ethnically diverse older people.” Contains both group and one-on-one components. | Clark et al., 2011; Jackson et al., 2009 |
| Experience Corps® | “...created to provide a context within which older adults could become (a) motivated to be engaged through the opportunity to “give back” and make a difference in the success of the next generation; (b) cognitively active through reading with children and library service; (c) physically active through daily transit to and service in schools; and (d) introduced into new social networks, which include other team members, children, teachers, and staff in the school community.” | Carlson et al., 2008 |

Table 8: Examples of Community-Focused Interventions

The first three community-focused interventions are examples of how communities adopted models for community interaction. The last two are examples of guides that target communities and cities.

| Name of Intervention | Description | Source |
|---|---|---|
| Community-Focused | | |
| The “Village” Model | Community-based organizations, often volunteer based, that provide older adults a variety of nonprofessional services, including housekeeping, transportation, and companionship, as well as referrals to other types of services. | Scharlach, Graham, & Lehning, 2011; Scharlach, Lehning & Graham, 2010; Scharlach, 2010 |
| International Intergenerational Community | “The purpose of this neighborhood was to promote permanency, community, and supportive relationships for families adopting foster children while offering purposeful engagement in the daily lives of older adults. This shared purpose is the reason people live there; it is what makes Hope Meadows an intentional community.” | Power et al., 2007 |
| Niagara Gatekeepers Program | Niagara Gatekeepers helps members of the community learn to identify the signs of a senior who may need support services to ensure safety and well-being. The program links these people to programs before a crisis situation develops. The program relies on volunteers to increase awareness of the signs of a senior at risk. These include: -having difficulty communicating/memory loss; -becoming withdrawn, hostile, or angry; -changing personal appearance; -deteriorating home conditions; -deteriorating health/difficulty seeing, speaking or hearing, poor mobility; -decreasing ability to handle money or pay bills; -experiencing neglect or abuse/isolation; wandering | http://www.niagararegion.ca/living/seniors/programs/gatekeepers.aspx Findlay, 2003 |
| Aging-Friendly Cities | Using a participatory research approach, research was done in 33 cities to develop a “checklist” of friendly cities. Components included Transportation, Housing, Social Participation, Respect and Social Inclusion, Civic Participation and Employment, Communication and Information, Community Support and Health Services, and Outdoor Spaces and Buildings. This guide is to be used in advocating for community change. | “Global age-friendly cities: A guide”, 2007 |
| Aging in Place Technical Assistance Guide | A guide that provides resources and information to assess and advocate for changes that create more aging-friendly communities. Designed for: -local, county, and state government planning agencies; -legislative advisory bodies on zoning, population, planning, and development; -municipal and county executives; -regional aging agencies; -community development councils | Partners, 2007 |

The background features a vibrant, abstract design with flowing, overlapping lines in shades of orange, red, and yellow, creating a sense of movement and depth. The lines are most prominent in the upper half of the image, where they curve and intersect, before settling into a solid, dark red field that occupies the lower half.

**THE CURRENT STATE OF
MEASURING ISOLATION**

Identifying the most effective ways to screen for and measure isolation is important. Shorter, validated measures could be more feasible if they are intended for a longer questionnaire. Regardless of the quality and feasibility of a measure, it is only useful in evaluating effectiveness of an intervention if it measures what you intend to change. Obviously it is extremely important to be clear about what specific aspect of isolation in the subpopulation the intervention is intended to target before choosing the appropriate outcome measure. The Dickens et al. (2011) review of interventions serves as an excellent example of the heterogeneity that exists in the types and foci of interventions aimed at addressing isolation and outcome measures used to evaluate them (See Table 9).

Table 9: Measures Used in Studies Featured in Dickens et al. (2011) Review

| Measures | Authors |
|--|---|
| Revised Social Adjustment Scale (RSAS); Beck Depression Inventory (BDI); Depression Adjective Check List (DACL) Form E | Constantino, 1988 (USA) |
| Revised UCLA Loneliness Scale; utilization of confidants questionnaire; satisfaction with mutual aid with other cancer survivors | Fukui et al., 2003 (Japan) |
| Shortened 35-item version of Chicago Activity Inventory | Harris & Bodden, 1978 (USA) |
| de Jong Gierveld Loneliness Scale; Social Production Function Index Level Scale | Kremers et al., 2006 (Netherlands) |
| Activities outside institution; social network index; contact desire index; Hopelessness Index, Depression Index; loneliness; perceived health | Lokk, 1990 (Sweden) |
| Loneliness; loneliness causing insecurity, being left alone causing insecurity; satisfaction with engagement with their children; number of friends and relatives; Geriatric Depression Scale (GDS-15) | Ollonqvist et al., 2008 (Finland) |
| UCLA Loneliness Scale (version 3); Lubben's Social Network Scale; social activity; psychological well-being | Routasalo et al., 2009 (Finland) |
| Social Support List-Interactions; de Jong Gierveld Loneliness Scale; Sickness Impact Profile 68 | Savelkoul & de Witte (2004) (Netherlands) |
| Modified form of revised UCLA Loneliness Scale for use with older adults; number of confidants in their life; CES-Depression scale | White et al., 2002 (USA) |
| Instrumental and Expressive Social Support Scale; Centre for Epidemiological Studies Depression Scale; contact with community and medical services | Brennan et al., 1995 (USA) |
| Paloutzian & Ellison Loneliness Scale; Perceived Social Support Scale; network embeddedness; Philadelphia Geriatric Center Morale Scale; Center for Epidemiological Studies Depression Scale | Heller et al., 1991 (USA) |
| Personal Resource Questionnaire | MacIntyre et al., 1999 (Canada) |
| Recent social and leisure activities | O'Loughlin et al., 1989 (Canada) |
| Activity index; % of time per day spent in active pursuits; % of next 7 days devoted to special commitments; Tri-scale Activity Composite; Wohlford Hope Scale; happiness; medications taken/day | Schulz, 1976 (USA) |
| de Jong Gierveld Loneliness Scale; social networks; SF-36 Mental Component Summary; Depression subscale of Symptoms Check List; anxiety subscale of Symptoms Check List | Slegers et al., 2008 (Netherlands) |
| Items from the Stokes Social Network List; satisfaction with social support | Drentea et al., 2006 (USA) |
| Participation in bureau/church/occupational therapy activities; depression; suicidal thoughts | Arnetz & Theorell, 1983 (Sweden) |
| Number of social ties; index of support satisfaction, Center for Epidemiologic Studies Depression | Baumgarten et al., 1988 (Canada) |
| UCLA Loneliness Scale; Wakefield self-rating depression scale; outside social activities; household chores | Evans & Jaureguy, 1982 (USA) |

| Measures | Authors |
|--|---|
| Social activity checklist; social networks; social support scale | Fujiwara et al., 2009 (Japan) |
| de Jong Gierveld Loneliness Scale; items from the Assertiveness scale; Personal Convoy Model of relationships; Positive and Negative Affect Scale | Martina & Stevens, 2006 (Netherlands) |
| Social isolation; activity and morale measures from OARS | Rosen & Rosen, 1982 (USA) |
| de Jong Gierveld Loneliness Scale | Stevens & van Tilburg, 2000 (Netherlands) |
| Change in support network size; extent of support; satisfaction with support network; Bradburn Affect Balance Scale; Brief Symptom Inventory | Toseland et al., 1990 (USA) |
| UCLA Loneliness Scale; Duke Social Support Index; Bradburn Affect Balance Scale; CES-Depression scale | White et al., 1999 (USA) |
| Self-appraisal re: their social support; beliefs re: family/ friends support behavior; UCLA Loneliness Scale (version 3) | Winningham & Pike, 2007 (USA) |
| Current networks; desired networks; number of phone calls/ week; number of visitors/ visits made per week | Bogat & Jason, 1983 (USA) |
| de Jong Gierveld Loneliness Scale, including social and emotional loneliness subscales | Fokkema & Knipscheer, 2007 (Netherlands) |
| Past Month Isolation Index; Mental Status Questionnaire; Mental Status Schedule | Mulligan & Bennett, 1977 (USA) |
| Abbreviated UCLA Loneliness Scale; number of new relationships formed in past year; number of people who depended on the participant; Center for Epidemiological Studies–Depression Scale; Rosenberg Self-Esteem Scale | Rook & Sorkin, 2003 (USA) |
| Number of people in network; change in support network; Bradburn Affect Balance Scale; Brief Symptom Inventory | Toseland & Smith, 1990 (USA) |
| UCLA Loneliness Scale (version 3); helplessness item of GDS-30; boredom item of GDS-30 | Bergman- Evans, 2004 (USA) |

It is apparent that subjective isolation, specifically loneliness, is most commonly used as an outcome measure. Specifically, the UCLA Loneliness Scale (several different versions) (Russell, 1996) and the de Jong Gierveld Loneliness Scale (De Jong Gierveld & Van Tilburg, 2006) appear to be the most popular measures of loneliness and have been repeatedly validated. However, such subjective measures are limited by the lack of objective forms of isolation and do not incorporate perceptions of the quality of relationships with one’s social network or community. Additional measures of isolation other than loneliness should be considered to have a broad or comprehensive measure of isolation. Popular measures of isolation include measures of one’s social network, and the most frequently used validated measures are the Lubben Social Network Scale and the Social Network Index originally created by Berkman and Syme. The most popular measure used in both practice and research settings in the abbreviated Lubben Social Network Scale (LSNS-6) (Lubben et al., 2006).

Isolation has also been measured in terms of a purely objective isolation, measuring only environmental characteristics. Locher et al. (2005) measured isolation by determining rural versus urban residence status, the existence of an adequate transportation system, and mobility status. Current conceptualizations and measures of social isolation in terms of networks have come under scrutiny. Cloutier et al. (2011) criticized the objective measures of social isolation that count frequency of social contacts and network size, stating these are not sufficient in conceptualizing social isolation. They explored the subjective dimensions of social isolation through qualitative study and determined there are additional layers of complexities that contribute to negative consequences of isolation. They recommend that a life course or lifespan perspective is required to better reveal these complexities (Cloutier-Fisher, Kobayashi, & Smith, 2011). Charles and Carstensen (2010) explained the usefulness of a life span model when understanding aging processes:

“The past several decades have witnessed unidimensional decline models of aging give way to life-span developmental models that consider how specific processes and strategies facilitate adaptive aging. In part, this shift was provoked by the stark contrast between findings that clearly demonstrate decreased biological, physiological, and cognitive capacity and those suggesting that people are generally satisfied

in old age and experience relatively high levels of emotional well-being. In recent years, this supposed “paradox” of aging has been reconciled through careful theoretical analysis and empirical investigation. Viewing aging as adaptation sheds light on resilience, well-being, and emotional distress across adulthood.”

The number of instruments designed specifically to measure isolation is limited. The following table contains a list of the most common measures found that directly measure isolation. Strengths, weaknesses, and feasibility information listed are based on previous studies and would need to be uniquely assessed for their use in the context of a specific observational or intervention study.

It is important to explore other measures relevant to isolation once the focus of research has been established. The following table contains examples of measures chosen as just a few examples of the many measures that could be chosen for use in a study of isolation depending on the purpose and aims of the research.

Table 10: Individual Measures of Isolation

| Name of Measure | Description | Strengths, Weaknesses, and Feasibility | Select Sources |
|---|--|---|---|
| UCLA Loneliness Scale | Developed to assess subjective feelings of loneliness or social isolation. In more recent versions, the format has been simplified to be appropriate to the measure to less educated populations and older adults. | Widely used instrument to measure loneliness and has been repeatedly validated. Does not include an objective isolation component. | Russell, 1996 |
| Overall, Emotional, and Social Loneliness | Measuring tool for overall, emotional, and social loneliness. Scores rank respondents on a scale from “not lonely” to “extremely lonely”. | Widely used instrument to measure loneliness and has been repeatedly validated. Does not include an objective isolation component. | De Jong Gierveld & Van Tilburg, 2006 |
| Lubben Social Network Scale | A brief instrument designed to gauge social isolation in older adults. It measures perceived social connections with family and friends and typically takes 5 to 10 minutes to complete. It consists of an equally weighted sum of 12 items used to measure size, potential support, confidants, social exchanges and frequency of contacts of a respondent’s social network. A 6 item abbreviated version is increasingly being used. | Designed for adults in later life. Has been validated in a variety of populations. Clinical cut points have been established in family subscale and friend subscale are calculated. | Emlet, 2006; Lubben et al., 2006; Lubben & Gironda, 2003; Lubben, 1988; Crooks, 2008. |
| Social Network Index (Berkman-Syme) | Is “based on four types of social connections: 1) marital status (married vs. unmarried); 2) sociability (frequency and contact with close friends and relatives measured as a subscale with levels 1, 2, and 3; lower values indicate fewer numbers and less contact); 3) religious group affiliation (yes vs. no); and 4) membership in other social or community organizations (yes vs. no).” | Widely used instrument to measure social networks and social integration. Does not include a subjective component. | Eng et al., 2002; Ikeda & Kawachi, 2010; Kroenke et al., 2012 |
| Loneliness Scale | Measures loneliness, a 3-item scale developed for large surveys. | Validated and found to be feasible to measure loneliness in large surveys. | Hughes et al., 2004 |

| Name of Measure | Description | Strengths, Weaknesses, and Feasibility | Select Sources |
|----------------------------|--|---|---|
| Cornwell and Waite Measure | Measure that incorporates objective and subjective components of isolation, calling the two dimensions of social disconnectedness and perceived isolation. Created by combining items from NSHAP study. Suggest that these indicators can be combined to measure two aspects of social isolation: social disconnectedness (i.e. physical separation from others) and perceived isolation (i.e. feelings of loneliness and a lack of social support). “We use the NSHAP data to create scales measuring social disconnectedness and perceived isolation and examine their distribution among older adults.” | Has not been validated as an instrument for screening or detecting change in isolation status. Developed from select items used in the NSHAP. | Cornwell et al., 2008; Cornwell & Waite, 2009 |

Table 11: Examples of Measures Relevant to Isolation

| Name of Measure | Description | Select Sources |
|--|--|--|
| Social Engagement | | |
| Engagement in Meaningful Activities Survey (EMAS) (this measure is related but is not a direct measure of isolation) | Reflects a broad conceptualization of meaning, including the perceived capacity of one’s activities to: a) be congruent with one’s value system and needs, b) provide evidence of competence and mastery, and c) have value in one’s social and cultural group | Goldberg, Brintnell, & Goldberg, 2002; Eakman et al., 2010 |
| Social Support Quality | | |
| Duke-UNC Functional Social Support Questionnaire | Measures social support in family medicine patients | Duke-UNC Functional Social Support Questionnaire |
| Health Status | | |
| Medical Outcomes Study 36-Item Short-Form Health Survey (MOS SF-36 Health Survey) | Medical Outcomes Study 36-Item Short-Form Health Survey (MOS SF-36 Health Survey) | Medical Outcomes Study 36-Item Short-Form Health Survey (MOS SF-36 Health Survey) |
| Functional Ability | | |
| Work and Social Adjustment Scale (WSAS) | Is a “five-item scale that assesses an individual’s ability to perform everyday activities including work, home management, family and relationship interaction, and social and private leisure activities.” | Cella, Sharpe, & Chalder, 2011 |
| Neighborhood Quality | | |
| Social Cohesion | Measures ability to trust and expect reciprocity from neighbors | Cagney et al., 2009; King, 2006; Mendes de Leon et al., 2009; Sampson, Raudenbush, & Earls, 1997 |





**GAPS IN OUR UNDERSTANDING AND
RESEARCH NEEDED TO ADVANCE
THE FIELD**

In general, a better understanding is needed of who, of those who are at risk, are most likely to become isolated and why. It would be ideal to have access to or conduct a survey of a nationally representative sample of Americans to understand the prevalence and risk for isolation as a means to determine the most appropriate ways to intervene.

ENGAGING ISOLATED PEOPLE IN RESEARCH TO ADVANCE UNDERSTANDING

- Many researchers have called for the need for more in-depth qualitative work to better understand the manifestation and meaning of isolation from people who are isolated, or have intimate knowledge about those who are isolated.
- Individuals who are isolated for different reasons could have vastly different needs that address their unique reasons for experiencing negative consequences of isolation.
- Research (ethnographic and other methods) aimed at developing a typology of isolation could be a useful step forward.

INTERVENTION EFFECTIVENESS

- Narrow down what types of interventions are effective.
- Determine which are most effective for particular subgroups.
- Determine if focusing on an outcome relevant to a particular subpopulation and concepts known to be related to isolation can improve effectiveness (e.g., enhancing social supports for caregivers, increasing social engagement in retired individuals, senior housing programs in low-income neighborhoods, or interventions aimed at promoting independence in later life by teaching people with mobility impairments to use devices and technology).

MECHANISMS AND THEIR IMPACT

- Research to further understand the mechanisms behind how isolation impacts health and quality of life outcomes.
- Research to further understand how life course factors like health, retirement, and bereavement are related to interconnectedness of the social networks of adults over 50 (Cornwell et al., 2008).
- Longitudinal studies to better identify the combinations of risk and protective factors leading to negative consequences of isolation.

FURTHER DEVELOPMENT OF INTERVENTIONS

- Addressing neighborhood-level factors and their impact on health behaviors related to isolation.
- Engage at the community-level, following best practices from the Community-Based Participatory Research model.



APPENDICES

DATA SETS RELATED TO AGING

Select data sets used in the literature cited in this report:

1. National Social Life, Health, and Aging Project (NSHAP)
2. General Social Survey (GSS)
3. National Health and Nutrition Examination Survey
4. American Community Survey 2009: <http://dataferrett.census.gov>
5. Elderly Well-Being Study (Clark et. al., 2011, *Dr. Clark has offered to use these data to examine isolation)
6. Chicago Neighborhood and Disability Study (CNDS) (Mendes de Leon)
7. Chicago Health and Aging Project (CHAP) (Mendes de Leon)
8. Chicago Health, Aging, and Social Relations Study (CHASRS) (Cacioppo et al., 2010; Wen et al., 2006)
9. Health and Retirement Study (Theeke, 2007; Hughes, et al., 2004)
10. 2007 Connecticut Long-Term Care Needs Assessment (Robison et al., 2009)
11. University of Alabama at Birmingham (UAB) Study of Aging (Locher et al., 2005)

The following were identified by the National Institutes of Health as Social and Behavioral Datasets in Aging:

1. Health and Retirement Study (HRS): <http://hrsonline.isr.umich.edu/>
2. Midlife in the United States (MIDUS): <http://www.midus.wisc.edu/>
3. Resources for Enhancing Alzheimer's Caregiver Health (REACH): <http://www.edc.pitt.edu/REACH/>
<http://www.edc.gsph.pitt.edu/reach2/>
4. The Advanced Cognitive Training for Independent and Vital Elderly (ACTIVE): <http://www.icpsr.umich.edu/cocoon/ICPSR/STUDY/04248.xml>
5. Social Environment and Biomarkers of Aging Study (SEBAS): <http://www.icpsr.umich.edu/cocoon/ICPSR/STUDY/03792.xml>
6. National Longitudinal Mortality Study: <http://www.census.gov/nlms/>
7. National Long-Term Care Survey: <http://www.nlts.aas.duke.edu/>
8. Panel Study of Income Dynamics: <http://psidonline.isr.umich.edu/>
9. Wisconsin Longitudinal Study (WLS): <http://www.disc.wisc.edu/wls/>
10. English Longitudinal Study of Ageing (ELSA): <http://www.ifs.org.uk/elsa/>
11. Survey of Health, Ageing, and Retirement in Europe (SHARE): <http://www.share-project.org/>
12. Mexican Health and Aging Study: <http://www.mhas.pop.upenn.edu/english/home.htm>
13. Korean Longitudinal Study of Ageing (KLoSA): http://klosa.re.kr/KLOSA/HTML_ENG/01.asp
14. Study on Global Ageing and Adult Health Study: <http://www.who.int/healthinfo/systems/sage/en/index.html>
15. National Survey of American Life (NSAL): <http://www.icpsr.umich.edu/cocoon/ICPSR/STUDY/00190.xml>

DETAILED DESCRIPTION OF TESTED INTERVENTIONS

According to an earlier review performed Cattan and White in 1998, characteristics of effective interventions for addressing isolation in older adults are:

- Interventions that contain group activities: for example, discussion; self-help; social activation; bereavement support;
- Interventions that target specific groups: for example, women; the widowed; the physically inactive; people with mild mental health problems;
- Interventions that use more than one method and are effective across a broad range of outcomes;
- Interventions where the evaluation fits the intervention and includes a process evaluation; and
- Interventions that allow participants some level of control.

Subsequent reviews of the literature support most of these conclusions as well as the inclusion of individual participation in intervention planning, using representative samples of their target population, and including facilitators who have adequate training and resources (Cattan, White, Bond, & Learmouth, 2005; Grenade & Boldy, 2008).

Findlay (2003) reviewed intervention studies found through a search of nine data bases [Medline, the Cochrane Library, the Campbell Collaboration Library, Proquest, Infotrac, PsychInfo, Sociological Abstracts, and Ageline] and identified 17 studies that focused on older people, featured interventions that targeted social isolation and/or loneliness, attempted to achieve a health benefit, and identified outcomes. The interventions were categorized as group (n=6), one-on-one (n=5), service provision (n=2), and teaching how to use the Internet (n=4). Findlay identified only 3 interventions out all 17 that had no effects; however, it is unclear what the criteria were used to claim interventions were effective and outcome measures were not listed. Findlay (2003) was able to identify gains for participants from both one-on-one and group interventions.

Cattan, White, Bond, and Learmouth (2005) conducted a review of health promotion interventions that targeted isolation and loneliness among older adults. They reviewed 13 databases [Medline, BIDS SCI and SSCI, EMBASE, PsychInfo, ASSIA, CINAHL, SweMed, FirstSearch, Academic Search Elite, SIGLE, the Cochrane Library, and LILACS] and screened for criteria and study design type. They identified thirty quantitative outcome studies conducted in U.S. and Canada (group, n=17; one-on-one, n=10; service provision, n=3; and community development, n=1) as well as 12 qualitative observational studies.

Impact: Cattan et al. defined effective interventions as having significant reduction in loneliness and/or isolation. The most successful intervention programs involved groups that contained education pieces and/or specific activities, and those that targeted specific groups such as caregivers, women, physically inactive, widowed, etc. Only 1 one-on-one intervention was found to be effective; however, the one-on-one interventions varied considerably in the main focus of their intervention and Cattan et al. suggest that appropriate measurement issues could have been problematic. Effective interventions also used representative samples. "The review suggests that educational and social activity group interventions that target specific groups can alleviate social isolation and loneliness among older people. The effectiveness of home visiting and befriending schemes remains unclear." (Cattan et al., 2005).

Outcome Measures used in Studies: Approximately two thirds of all studies used loneliness as a main outcome measure. Among those were two validated instruments [UCLA Loneliness Scale (8 studies), and de Jong Geirveld Loneliness Scale (2 studies)]. Nine studies added a loneliness item or used a different loneliness scale. Some studies used measures of network size, social support or coping style (these measures were not specifically listed by Cattan et al.).

Sabir et al. (2009) documented the feedback of practitioners and researchers in a Cornell Institute for Translational Research on Aging (CITRA) Research-to-Practice Consensus Workshop that focused on the findings of Cattan et al.'s 2005 review of interventions. Practitioners' main critique of the finding that the one-on-one interventions were largely ineffective was that the interventions were secondary medical interventions. Practitioners indicated that

if interventions were more person-centered and focused on relationship-building, they would be more effective. Furthermore, practitioners pointed out that there are many circumstances in which one-on-one interventions targeting isolation would be the most appropriate for certain people. Finally, practitioners believe that researchers have too narrow of a focus when developing interventions. They perceive problems experienced by clients as multi-factorial (suggesting that isolation may be only one aspect of several problems that have negative consequences) and that multi-focused or multi-systemic interventions might be more beneficial and effective for recipients of the intervention. (Sabir et al., 2009).

Dickens et al. (2011) reviewed 10 databases [MEDLINE, EMBASE, ASSIA, IBSS, PsycINFO, PubMed, DARE, Social Care Online, the Cochrane Library and CINAHL] and screened 7,067 articles to find intervention studies (randomized controlled trials and quasi-experimental studies) designed to alleviate social isolation and loneliness in adults in later life. They selected 32 studies to review (10 of which were also reviewed by Cattani et al. in 2005) that had a broad variety of intervention strategies addressing mental, physical, and social health. These studies took place in a variety of different countries; 15 of them took place in the U.S. The participants of interventions were identified as caregivers, people living with illness, skilled nursing facility residents, and people living independently in the community including specialized housing. Only 12 out of 32 studies targeted people specifically who were screened/assessed to be socially isolated or lonely; the rest were assumed to be at risk based on their circumstances. Nineteen of the studies involved group interventions, 11 were one-on-one, one was a combination, and another was a modification to skilled nursing facility programming. The majority of the interventions were facilitated by professionals or paraprofessionals, with the duration lasting between 6 months and 1 year and the frequency of contact with participants occurring weekly or every other week. Interventions targeted one or more of the following: loneliness, social isolation, structural social support, functional social support, depression, mental well-being, and/or physical health. The categories of intervention types were social or activity programming (n=7); counseling, therapy or education (n=15); training on Internet use (n=4); and home visiting (n=5) or service provision (n=1). Dickens et al. identified all studies as having either moderate or high risk of bias in these studies.

Impact: Interventions that involved active participation, which “entailed active input from participants involving social contact (not necessarily face to face) rather than them simply being recipients of a service or education/training”, had 80% effectiveness versus the 40% of non-participatory interventions. Of the group interventions, 79% found improvement on at least one outcome as compared to 55% of the one-on-one interventions. Those interventions that specifically targeted social isolated individuals were less likely to be effective. Only 59% of studies that did not have a theoretical foundation for their intervention were effective as opposed to the 85% of those that did claim a theoretical basis. The types of interventions found to be most effective were activities or support interventions (counseling, therapy or education). “Our systematic review has identified a need for well-conducted studies to improve the evidence base regarding the effectiveness of social interventions for alleviating social isolation. However, it appeared that common characteristics of effective interventions may include having a theoretical basis, and offering social activity and/or support within a group format. Interventions in which older people are active participants also appeared more likely to be effective.” (Dickens, Richards, Greaves, & Campbell, 2011).

Outcome Measures used in Studies: Twenty-two of the 32 studies used validated outcome measures and three used partially validated measures. To measure subjective isolation (loneliness or perceived isolation), the majority of studies used a loneliness scale (most used a form of the UCLA or the de Jong Gierveld Loneliness Scale) or a measure of satisfaction with interaction with members of one’s social network/social supports. Objective isolation was measured using some type of social network index or count of number of members in one’s network and participation/engagement in some form of social activities. See table 7 for a complete list of measures used in the studies Dickens et al. reviewed. Had it not been for the broad inclusion of multiple definitions of isolation and the range of domains addressed by the interventions, this review would not have identified this many intervention studies.

Masi et al. (2011) conducted a meta-analysis of interventions aimed at reducing loneliness (subjective isolation). They searched two databases: PubMed and PsycINFO, for studies of interventions aimed at reducing loneliness and measured outcomes quantitatively. Of the 928 references originally identified, 50 studies qualified for the

meta-analysis. Although approximately two-thirds of the studies they found had participants who were 60 years or older, that was not their focus of the review. “Intervention type was categorized (a) as social skills training if the intervention focused on improving participants’ interpersonal communication skills, (b) as enhancing social support if the intervention offered regular contacts, care, or companionship, (c) as social access if the intervention increased opportunities for participants to engage in social interaction (e.g., online chat room or social activities), and (d) as social cognitive training if the intervention focused on changing participants’ social cognition.” The goal of their review was to determine quantitatively if loneliness outcomes were different depending on study design, intervention type, or other aspects of the study.

Impact: There were indications of at least some effectiveness in reducing loneliness in all design and intervention types. Effect sizes for reducing loneliness were larger in the single group pre-post and non-randomized group comparison designs; however, Masi et al. point out that such designs have flaws that could produce bias in these results. Therefore, they heed results of the randomized controlled trials (RCT) with higher attention. Based on their findings from RCTs, those therapies focusing on social cognitive (e.g. Cognitive Behavioral Therapy) had a small but significant effect in reducing loneliness, more so than that the other intervention types. Although interventions involving technology resulted in higher efficacy in nonrandomized studies (which have a selection bias), technology did not appear to have the same effect in RCT studies, suggesting that the advantage of using technology interventions to reduce loneliness may not exist for the general population.

Outcome Measures used in Studies: The majority of studies in this review used some form of the UCLA Loneliness Scale or the de Jong Gierveld Loneliness Scale. Other studies used a scale specifically created to measure the concept of loneliness.

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