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# A new conceptual model of experiences of aging in place in the United States: results of a systematic review and meta-ethnography of qualitative studies

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## Abstract

**Objectives:** The purpose of this systematic review was to synthesize the evidence on experiences of aging in place in the United States.

**Design:** Systematic review and meta-ethnography of qualitative studies.

**Data sources:** We searched six bibliographic databases (PubMed, Embase, PsycINFO, CINAHL, Web of Science, Sociological Abstracts), with no limits on publication date. Eligible studies reported peer-reviewed qualitative research on experiences of aging in place in the United States with full-text available in English.

**Review methods:** Three reviewers independently used Covidence software to screen titles and abstracts followed by full texts. We assessed quality and risk of bias using a modified version of the Joanna Briggs Institute Checklist for Qualitative Research. Qualitative data analysis was conducted using meta-ethnography, following Noblit and Hare's seven-step method of translation and synthesis to generate a novel conceptual model.

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**Results:** Of 2659 papers screened, 37 unique studies were eligible for inclusion, reported in 38 publications. The studies were conducted in 16 states and published between 1994 and 2018. The included samples represented 1199 participants in total, with mean ages ranging from 48 to 91 years. The gender of the samples ranged from 20% to 100% female, with a median of 77%. One-third of the included studies did not report participants' race/ethnicity, and half of the remaining study samples were at least 90% white; however, 20% of the studies focused exclusively on experiences of racial/ethnic minority older adults. Using meta-ethnography, we developed a new conceptual model of aging in place in the United States as a dynamic process of balancing threats and agency in relation to experiences of identity, connectedness, and place. We found that people aging in place were engaged in significant work to cope with unpredictable needs and challenges by changing their mindset, adapting their home environment to accommodate new needs, and finding different ways to connect with important people in their lives. Agency was shaped by resources and restrictions on choice, and where threats to aging in place outweighed an individual's sense of agency, the consequences included feelings of uncertainty, isolation, and dislocation.

**Conclusions:** To the best of our knowledge, this is the first systematic review of qualitative studies to evaluate experiences of aging in place in the United States. The findings of our meta-ethnographic synthesis led to development of a new conceptual model of aging in place highlighting the dynamic tensions involved in balancing threats and agency.

## 1. Introduction

Aging in place is an increasingly important concept globally. Around 9% of the world's population is over 65, and this age group is growing faster than all others worldwide (United Nations Department of Economic and Social Affairs Population Division, 2019). By 2030, it is projected that 23.5% of the population of the US will be over 65, compared to 14.5% in 2014 (Vespa et al., 2018). While the growth of the US population as a whole is likely to slow, it will continue to become both older and more diverse. As people live longer, they experience higher rates of chronic disease; in 2014, 81% of US adults aged 65 years or older reported multiple chronic conditions, compared to 42% of the general population (Buttorff et al., 2017). One response to the growing number of older adults in the US has been to encourage aging in place, which is seen as both cheaper and preferable to moving to an institutional setting in older age. Although there is no consensus on the exact meaning of aging in place, the definition used by the Centers for Disease Control and Prevention (2009) is often used: "the ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level." Policy initiatives aimed at supporting aging in place in the US include insurance coverage for home-based care and subsidies for home adaptation (Szanton et al., 2016). Such strategies are seen as cost-effective as the costs of residential care in the US continue to rise; in 2018 the median

annual cost of a private room in a nursing home was $100,375, and 62% of nursing home residents are publicly funded through Medicaid (Kaiser Family Foundation, 2017).

Aging in place is not only popular with policymakers but also seems to be the preferred option among the general US population. In 2018, an American Association of Retired Persons (AARP) survey found that 76% of people aged 50 or older would prefer to remain in their current home for as long as possible, and the number of people with this preference increased with age (American Association of Retired Persons, 2018). However, lesbian, gay, bisexual, and transgender older adults and African Americans were more likely to predict that they would move elsewhere in the future, perhaps reflecting unmet needs or different preferences for aging. Alternatives to aging in place for these groups may include moving in with family, shared housing, or institutional settings that are explicitly welcoming to them (American Association of Retired Persons, 2018); residential settings may feel more comfortable for people who would have increased access to social support there than at home. In their summary of theoretical perspectives, Scharlach and Moore (2016) call for research focusing on disparities in ability to achieve aging in place and exploring the diverse and dynamic nature of older adults' experiences, rather than accepting aging in place as "a single, universal goal" (p. 420).

A review of trends in publications about aging in place since 1980 traces a gradual increase in the number of papers published during the 1990s, followed by a sharp rise from 2000 onwards (Vasunilashorn et al., 2012). The authors also note the broadening range of topics covered, including health, technology, services, and environment, among others, as well as the diversity of aging-in-place populations considered in the literature. Over time, the proportion of research-based articles increased markedly compared to policy-based papers, perhaps suggesting that aging in place is now considered to be well established as a policy direction.

Despite the growing number of published papers on aging in place, only two systematic reviews specifically about aging in place have been published and neither explores the complexity and diversity of experiences of aging in place in the US (Graybill et al., 2014, Peek et al., 2014). In a systematic review of factors influencing acceptance of technology, including qualitative, quantitative, and mixed-methods studies, the authors identified six themes: concerns, expected benefits, needs, alternatives, social influences, and characteristics of people aging in place (Peek et al., 2014). Another systematic review of economic evaluations of aging in place suggested that assisted living technologies such as telemedicine and home modifications may be cost-effective (Graybill et al., 2014).

The close focus on technologies in existing systematic reviews in this field means they illuminate only one aspect of what it is like to age in place. In addition, these previous reviews include data from a range of countries around the world, making it difficult to separate the influence of country-specific differences in norms, policies, and service provision from variations in fundamental processes of aging in place. Therefore, a holistic review of the qualitative literature on aging in place is needed to shed light on lived experiences of aging in place for older adults in a range of different circumstances. To address these knowledge gaps, we aimed to conduct a systematic review and meta-

ethnography of qualitative studies to synthesize the evidence on experiences of aging in place in the US. We focus exclusively on studies conducted in the US due to its particular demographic, structural, cultural, and political context.

## 2. Methods

### 2.1 Protocol and registration

This review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement and checklist (Moher et al., 2009) as well as the Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ) guideline (Tong et al., 2012) and the eMERGe guidance for reporting meta-ethnography (France et al., 2019). It is registered with the International Prospective Register of Systematic Reviews (PROSPERO), registration number CRD42018102847. A detailed description of the methods can be found in the published study protocol (Rosenwohl-Mack et al., 2018).

### 2.2 Synthesis methodology

This synthesis of qualitative studies on aging in place in the US was conducted using meta-ethnography, following Noblit and Hare's seven-step method (Noblit and Hare, 1999, Rosenwohl-Mack et al., 2018). This interpretive approach was selected here due to its focus on generating new conceptual models to explain complex phenomena (Atkins et al., 2008). Meta-ethnography involves the extraction, analysis, and translation of first- and second-order constructs (Schutz, 1962) from included studies in order to form novel third-order constructs. First-order constructs are defined as direct quotations from participants in the included studies, second-order constructs are the original study authors' interpretations, and third-order constructs are new conceptual insights generated by the authors of the meta-ethnography.

### 2.3 Eligibility criteria

Studies were eligible for inclusion if they met the following criteria: 1) qualitative research; 2) on the experiences of community-dwelling older adults aging in place; 3) conducted in the US; 4) published in English; and 5) in peer-reviewed publications. Those studies in which participants had already relocated or decided to relocate to institutional settings such as nursing homes or age-segregated supportive housing were excluded. For the purposes of this study, aging in place was defined as remaining in one's familiar home or community until the end of life. This working definition was developed by reviewing institutional and theoretical definitions of aging in place, including those provided by the Centers for Disease Control and Prevention, American Association of Retired Persons (AARP), and the National Aging in Place Council. We considered studies to be about aging in place and therefore eligible for inclusion if they described aging in place as defined above in their introduction or results section. We did not impose any eligibility criteria related to participant age, since aging trajectories are highly individual and influenced by many factors beyond chronological age (Rosenwohl-Mack et al., 2018).

### 2.4 Information sources and search strategy

A pre-planned systematic search strategy was developed in conjunction with a medical librarian for use with six electronic databases: PubMed, Embase, PsycINFO, CINAHL, Web of Science, and Sociological Abstracts (see Supplement for search details). A combination of MeSH/Emtree terms and keyword searches were used to identify studies on aging in place that met the inclusion criteria above, with the final searches completed in May 2018. No date limits were applied, to facilitate evaluation of how the concept of aging in place and interest in exploring it through qualitative research have developed over time.

### 2.5 Study selection

All of the retrieved references were imported into Endnote reference management software (Clarivate Analytics, 2018), duplicates were removed, and then the remaining citations were imported into Covidence systematic review software (Veritas Health Innovation, 2013). In the first phase of screening, two researchers (AR-M and YF) independently assessed study titles and abstracts against the eligibility criteria. In the next stage, the remaining studies were read in full by AR-M and KS, with an agreement rate of 96.5%. Discrepancies at each stage were resolved through discussion with a third researcher (KS or YF).

### 2.6 Data collection process and data items

One researcher (AR-M) extracted information on each study's aims, sample characteristics, and methods, populating a table created in Microsoft Word. A second researcher (YF) checked the data extracted for a sample of the studies. AR-M also extracted second-order constructs, i.e. themes identified by the researchers from the results section of each study, alongside direct quotations from participants (first-order constructs), creating a second data table for use in the process of meta-ethnographic synthesis.

### 2.7 Quality assessment and risk of bias

AR-M assessed the quality and risk of bias of each study using a modified version of the Joanna Briggs Institute Checklist for Qualitative Research (The Joanna Briggs Institute, 2017); two fields were added: relevance to the synthesis and overall quality assessment. The overall quality was rated as either key paper, satisfactory paper, irrelevant to the synthesis, or fatally flawed, following Dixon-Woods and colleagues (2007). The "key paper" designation referred to studies that demonstrated robust methods and focused specifically and primarily on aging in place. Irrelevant and fatally flawed studies would be excluded, all satisfactory papers would be included, and key papers would be given particular weight in the meta-ethnographic synthesis. KS and YF independently assessed the quality and risk of bias in a sample of five studies to confirm inter-rater agreement. The GRADE-CERQual approach (Lewin et al., 2015) was used to assess how much confidence should be placed in the conclusions of this systematic review, incorporating evaluation of methodological limitations, adequacy of the data presented, and the coherence and relevance of the findings.

### 2.8 Synthesis of results

AR-M and KS worked closely together on the meta-ethnographic synthesis, using an iterative and inductive approach; YF provided feedback at each stage. AR-M created a

translation table using Microsoft Word to group similar second-order constructs together and to compare these across studies, developing original third-order constructs to inform a new conceptual framework. We extracted second-order constructs from sets of five to ten studies at a time, allowing us to carefully compare each new set of constructs to our developing model and identify points of agreement as well as difference. Only themes and quotations reported in the results section of each study were included. Visual representations, reflective and analytic memos, and discussion of key dynamics and tensions in the data were used to refine the emerging model.

We used multiple strategies to maintain rigor and reduce bias, including the active participation of an experienced qualitative researcher in the analysis, sustained engagement and immersion in the data, and regular meetings of all three researchers to review emerging findings (Creswell, 2007, Tracy, 2010). We also explored our positionality as researchers and the potential impact of our experiences, assumptions, and biases on our data analysis through reflexive memos and discussion.

## 3. Results

### 3.1 Study selection

Figure 1 summarizes the process of study selection. 37 unique studies were ultimately included in the meta-ethnographic synthesis.

### 3.2 Study and sample characteristics

**Table 1.**

Study and sample characteristics

| # | Author (year) State | Primary aim | Methodological approach | Sample size | Age range or mean (sd) Gender | Race/ ethnicity | Education | Annual income Employment status | Liv ho sit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Porter (1995), Porter (l994) NR[1] | To describe older widows' experience of living at home alone | Interpretive paradigm of social gerontology (phenomenologic al sociology) | 7 | 75–83 100% female | NR | NR | NR NR | 10 alo ho |
| 2 | Krothe (1997) NR (Midwest) | To understand the context within which designated elderly individuals would be able to continue residing in their communities | Constructivist paradigm | 9 | 65–93, 81 (NR) 78% female, 22% male | NR | NR | NR NR | 6– pre res (m |
| 3 | Porter (1998) Missouri, Wisconsin | To describe older widows' intentions concerning their preferred future living arrangements | Descriptive phenomenology | 16 | 75–84 100% female | 100% "of European ancestry" | NR | NR NR | 10 alo ho |

| # | Author (year) State | Primary aim | Methodological approach | Sample size | Age range or mean (sd) Gender | Race/ ethnicity | Education | Annual income Employment status | Li ho sit |
|---|---|---|---|---|---|---|---|---|---|
| 4 | Swenson (1998) NR | Explored the meaning of home to women who were living in their own homes | Hermeneutic methods of analysis | 5 | 75–87 100% female | NR | 100% high school graduates | NR NR | 10 alc tov sar for yea |
| 5 | Keigher (2000) Wisconsin | To identify and examine the "interests" of different stakeholders in care | NR | 40$^2$ | 80.3 (10.3) 65% female | 32% black, others NR | NR | NR NR | 38 alc ow dw |
| 6 | Roberts and Cleveland (2001) Maine | To explore the life experiences of elder island women | Phenomenology | 9 | 80–94 100% female | 100% "Caucasian" | 22% did not finish high school, 44% high school diploma, 33% one or more years education beyond 12th grade | NR 33% still working | 10 alc 77 cur res |
| 7 | Rosel (2003) Maine | Exploration of elders' personal knowledge of where and with whom they are aging in place | Phenomenology, narrative accounts | 10 | 72–91 80% female, 20% male | NR | NR | NR NR | 10 ho 24 in res (m |
| 8 | Stevens-Ratchford and Diaz (2003) District of Columbia | To examine aging in place in relation to occupation and successful aging | NR | 4 | 65–77, 72.75 (NR) 100% female | 75% African American, 25% Native American | 50% graduated from college; 50% graduated high school and received some type of vocational training | NR 100% retired for at least one year | 50 alc |
| 9 | Hinck (2004) Missouri | To describe life experiences of oldest-old individuals in the rural Midwest | Interpretive phenomenology | 19 | 85–98, 90.7 (NR) 68% female, 32% male | 100% white | NR | NR NR | 10 alc are |
| 10 | Crist et al. (2006) NR (Southwest) | To explore Mexican American elders' use of home care services more comprehensively than previous research | Grounded theory | 11 | 55–80 NR | 100% Mexican American | NR | NR NR | 82 wi car |
| 11 | Cook et al. (2007) Iowa | To gather baseline data on risk and resiliency factors in rural elderly persons | NR | 42 | Focus group means: 77.5; 91.2; 78; 88.5 70% female (3 focus groups); 56% female (one focus group | 100% white | NR | NR NR | 60 40 |

| # | Author (year) State | Primary aim | Methodological approach | Sample size | Age range or mean (sd) Gender | Race/ ethnicity | Education | Annual income Employment status | Liv[...] ho[...] sit[...] |
|---|---|---|---|---|---|---|---|---|---|
| 12 | King and Dabelko-Schoeny (2009) US-wide | To understand the healthcare and social support experiences of midlife and older LGB adults living in rural areas and their perceptions of their ability to remain in their homes as they age | Qualitative grounded theory approach | 20 | 40–75 | 5% biracial; 5% Hispanic; 90% white | NR | NR | NR |
| | | | | | 20% female; 80% male | | | NR | |
| 13 | Lewis (2009) Alabama | To illuminate the complex interplay of social structures and meanings and to offer insight on ways to better serve aging refugees and immigrants | Ethnography | 38 | NR | 100% Cambodian (Khmer) | NR | NR | Ru[...] loc[...] |
| | | | | | NR | | | NR | |
| 14 | Birnholtz and Jones-Rounds (2010) NR | How seniors balance their desire for independence with the need to interact, and how caregivers and relatives help them do this | NR | 11 seniors | 74 (7.9) | NR | NR | NR | Ar[...] co[...] of [...] sm[...] |
| | | | | | 27% male, 73% female | | | NR | |
| 15 | Heatwole Shank and Cutchin (2010) North Carolina | Exploring how occupational engagement generates meaning | Multiple case study approach | 3[3] | 87–90 | 100% "Caucasian" | NR | NR | 10[...] alo[...] yea[...] cur[...] |
| | | | | | 100% female | | | NR | |
| 16 | Steggell et al. (2010) | To investigate the interests and concerns of USA minority elder women regarding the application of technology to support aging in place | NR | 19 Korean | 65–83 | 100% Korean | 32% less than high school, 42% high school, 5% vocational school/some college, 21% college graduate | 69% =< $15,000, 11% $25,000–$49,000, 21% >=$50,000 | 16[...] alo[...] in [...] 5%[...] 6–[...] >=[...] |
| | | | | | 100% female | | | NR | |
| | Oregon | | | 13 Hispanic | 62–73 | 100% Hispanic | 85% less than high school, 15% high school | 92% =< $15,000, 8% $25,000–49,000 | 10[...] wi[...] ye[...] <1[...] 15[...] 39[...] 39[...] |
| | | | | | 100% female | | | NR | |
| 17 | Dye et al. (2011) | To elicit perspectives from rural residents regarding appropriate strategies, specifically the | NR | 39 | 10.3% 60–64 years; 20.5% 65–69 years; 28.2% 70–74 years; 15.4% 75–79 years; 12.8% 80–84 | NR | 33% high school diploma or less; 38.5% college degree | 28.2% < $13,000; 12.8% $13,000–$18,999; 7.7% $19,000-$24,999; 17.9% | 89[...] in [...] 10[...] in [...] cou[...] liv[...] fan[...] |

| # | Author (year) State | Primary aim | Methodological approach | Sample size | Age range or mean (sd) Gender | Race/ ethnicity | Education | Annual income Employment status | Liv ho sit |
|---|---|---|---|---|---|---|---|---|---|
| | | use of paraprofessionals [to facilitate aging in place] | | | years; 12.8% 85+ years | | | $25,000-$44,999; 25.6% over $45,000 | |
| | South Carolina | | | | NR | | | NR | |
| 18 | Beard et al. (2012) NR | Compares how diagnosed individuals and those who care for them define AD and narrate their subsequent experiences | Grounded theory | 20 (10 couples) | 50–89, 73 (NR) 50% female, 50% male | 80% Caucasian, 20% Hispanic | All had at least 12 years of schooling; 9 of 10 couples had at least some college | Median income $65,000–$99,999, one couple below $20,000 NR | 90 10 |
| 19 | Kietzman et al. (2012) California | To learn about the broader support network that IHSS care recipients avail themselves of to maintain their status of living independently in the community | NR | 33 | 65–90, 75 (NR) 79% female | 45.5% white, 30.3% Latino, 12.1% African American, 3% American Indian, 3% African American/ American Indian; 3% Chinese; 3% Filipino[4] | 58% more than high school; 15% high school graduate; 27% less than high school[5] | 100% low income (Medicaid eligible) NR | NR |
| 20 | Lau et al. (2012) Illinois | Describe the use of informal and formal support and explore perceived barriers to their use among community-dwelling Nikkei elders living alone | NR | 34 | 78 (NR) 79% female, 21% male | 100% Japanese American | 24% high school diploma or less, 34% some college, 27% college degree, 15% graduate/ professional degree | 19% less than $20,000; 15% $20,000-$30,000; 17% $30,001-$40,000; 20% 40,001-$50,000; 17% more than $50,000; no answer 12% NR | 75 ho 65 me are sub |
| 21 | Heinz et al. (2013) NR (Midwest) | To explore some of the greatest needs and challenges a diverse group of older adults believed they were facing or would face in the future | NR | 30 | 83 (8.11) 60% female, 40% male | 96.7% white, 3.3% not reported | High school diploma 23.3%; some college 23.3%; college degree 23.3%; some postgraduate education 6.7%; graduate/ professional degree 20%; missing data 3.3% | NR 96.7% retired; 3.3% working part time | 3 f gr re un to sm co |

| # | Author (year) / State | Primary aim | Methodological approach | Sample size | Age range or mean (sd) / Gender | Race/ ethnicity | Education | Annual income / Employment status | Liv ho sit |
|---|---|---|---|---|---|---|---|---|---|
| 22 | Kohon and Carder (2014) / Oregon | To learn how low-income older adults perceive their independence, health, and identity in relation to their place of residence | NR | 47 | 69 (NR) / 70% female; 30% male | 74% white/ Caucasian, 11% Black/ African American, 2% Indian/ Alaska Native, 2% Asian, 6% multiracial, 4% no response [6] | NR | Average monthly income $938 / NR | 10 in su ho wa 38 tim cu ho ye |
| 23 | Black et al. (2015) / NR | To advance our understanding of older adults' perceptions and the broader contributions of community residents in affecting dignity and independence in everyday interactions with older adults | Appreciative inquiry; participatory action research | 267 | 65–98 / 75% female | 91% Caucasian | 57% college educated | Focus groups: 19% <$13,000, 23% $13,001­26,000, 19% $26,001­55,000, 39% >$55,000. / 10% currently working / E-survey: 6% <$13,000, 18% $13,001­26,000, 30% $26,001­55,000, 46% >$55,000 / 20% currently working | Fo gr liv 10 in E-s 40 alc liv |
| 24 | Bowland (2015) / Washington | To learn about the traumatic experiences, current concerns, and internal/ external resources of older African American female survivors of interpersonal trauma who lived in the community | Modified grounded theory | 25 | 49–77, 60.9 (6.2) / 100% female | 100% African American | 28% did not have a high school education; 40% attended college; 24% had degrees | 68% income $5000–10,000; 28% income under $5,000 / 56% not working or retired | Mi pu ho me are ris bu sar |
| 25 | Lien et al. (2015) / NR (Pacific Northwest) | To examine objective measures of accessibility in concordance with perceived usability of the home environment among older adults with functional limitations | Mixed methods embedded approach | 12 | 66–89 / 42% male, 58% female | NR | NR | NR / NR | 58 sin det ho age ho cus pla age Ye cu ho 0– 11 21 |
| 26 | White et al. (2015) / NR | Provide insights into low SES older adults' experiences of health in and around the home | NR | 8 | 69–86, 77.25 (5.78) / 100% female | NR | NR | 100% income of less than $20,000 a year / 100% retired | 10 alc urb rur apa 25 |

| # | Author (year) State | Primary aim | Methodological approach | Sample size | Age range or mean (sd) Gender | Race/ ethnicity | Education | Annual income Employment status | Li... ho... sit... |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | far... 12... ho... |
| 27 | Yamasaki (2015) Minnesota | What impact do the collective faith-based stories of service, socialization, and support have on older adults aging in community in Kasson? | Asset-based community development approach to participatory research | 27[7] | 72–96, 84 (NR) NR | NR | NR | NR NR | NR |
| 28 | Bradford et al. (2016) Massachusetts | To identify factors that facilitate or pose barriers to older lesbians' healthy aging and to gain insights into their needs and preferences for where and how they hope to live as they age | NR | 26 | 64–71, 68 (NR) 100% female | 100% white non-Hispanic | NR | Median income $50,001-$70,000. 54% retired | 36... alo... sin... ho... apa... co... ro... bu... to... all... ru... ur... |
| 29 | Dobner et al. (2016) Oregon | What are the experiences of formal and informal social support and neighborhood ties of older adults ageing in place in Amsterdam and Portland? | Comparative case study with multiple (within-case) observations | 27[8] | 65–94, 73 (NR) 63% female, 37% male | NR | NR | NR NR | 30... alo... |
| 30 | Heatwole Shank and Cutchin (2016) North Carolina | To develop a grounded theory of community livability for older adults, specifically attending to the relationship of older adults and the physical and social environments through which daily activities unfold | Grounded theory; instrumental multiple case study design | 12 | 71–99, 78 (NR) 67% female; 33% male | 33% African American, 67% Caucasian | 25% less than high school | NR 33% working part time; 67% not working | 50... alo... liv... ful... ca... Av... in... res... ye... 58... de... ho... apa... 17... |
| 31 | Lindquist et al. (2016) Illinois, Indiana | To explore what older adults perceived would affect their ability to remain in their own home and how they had planned for these potential events | NR | 68 | 73.8 (6.5) 72.1% female | NR | 8.8% some high school, 14.7% high school graduate, 26.5% some college, 19.1% college graduate, 25% some postgraduate education | NR 8.38% retired, 4.4% working, 2.9% unemployed/ looking for work, 4.4% other, 4.4% did not respond | 70... apa... ho... 8.8... ret... co... 16... 4.4... res... 70... 17... sub... 5.9... |

| # | Author (year) State | Primary aim | Methodological approach | Sample size | Age range or mean (sd) Gender | Race/ ethnicity | Education | Annual income Employment status | Li ho sit |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | did res |
| 32 | Portacolone and Halpern (2016) California | In-depth analysis of the composite dynamics behind the increasing segregation of older Americans living alone | Micro/subjective, meso/ institutional, and macro/ ideological lens of analysis | 47[9] | NR (all over 75) 71% female, 29% male | 63% white, 8% Asian, 21% Black, 8% Latino | NR | NR NR | 10 alo |
| 33 | Powell (2016) NR | To better understand the lived experiences of persons who share a campus-adjacent neighborhood | NR | 71[10] | Interviews: 62.38 (NR)[11] Interviews: 50% female[14] 50% male | Interviews: 82% white, 18% non-white[12] | NR | NR NR | Int Me of apa ten 31 Me of nei ten 34 |
| | | | | | Focus groups: 62.5 (NR) Focus groups: 79% female, 21% male | Focus groups: 63% white, 37% non-white | NR | NR NR | Fo gro yea ho apa ten 33 Me of nei ten 33 |
| | | | | | Photovoice: 48 (NR) Photovoic e: 38% female, 62% male | Photovoice: 100% white | NR | NR NR | Ph Me of apa ten 26 Me of nei ten 32 |
| 34 | Boggs et al. (2017) Colorado | To assess the perceptions of urban-dwelling LGBTQ older adults on aging in place to inform the development and implementation of an aging in place model | NR | 73 (intercept survey 17, focus group 14, town hall 30, final interview 12)[15] | 40–79 69% female, 31% male, 7% transgender[16] | 26% white, 3% Hispanic, 3% African American; 62% not reported | NR | NR NR | 45 alo ho apa cor tow me cur ad (sc |
| 35 | Butler (2017) Nation-wide | To respond to the question of whether the phenomenon of nearly all home care workers being women mitigates potential tensions for | NR | 20 | 66–86, 71.9 (NR) 100% female | 100% white | 70% had received a graduate degree | 25% under $20,000, 35% $20,000-$40,000, 30% $40,000-$60,000, 10% over $80,000 NR | NR |

| # | Author (year) State | Primary aim | Methodological approach | Sample size | Age range or mean (sd) Gender | Race/ ethnicity | Education | Annual income Employment status | Li ho sit |
|---|---|---|---|---|---|---|---|---|---|
| | | older lesbians using home care services Gaining an understanding of the relationship between the lesbian receiving services and the home care workers delivering those services | | | | | | | |
| 36 | Li et al. (2017) California | To understand older Chinese immigrants' experiences of aging in the United States | NR | 24 | 65–92, 77.38 (NR) 54.2% female, 45.8% male | Self-identity: 12.5% American, 37.5% Chinese, 41.7% Chinese American, 8.3% Chinese and American | 45.9% lower than high school, 20.8% high school, 33.4% higher than high school | NR 25% working, 75% not working | 37 alo yea Un = 2 12 |
| 37 | Yuan et al. (2018) NR (Northeastern US) | What are the activities that older adults coproduce with one another and the hindrances for doing them? How can our findings shed lights on technology designs to facilitate and support diverse coproductions? | NR | 13 | 59–95[17] 31% male, 69% female | NR | NR | NR NR | Co |

[1] Not reported

[2] Demographic information only available for 34 of the 40 participants

[3] Only two participants were aging in place; characteristics reported here are for those two only

[4] Total 99.9% due to rounding

[5] Data only available for 26 of the 33 participants

[6] Total 99%, rounded percentages reported

[7] 7 living in assisted living but demographic data only provided for combined sample

[8] All sample demographics only reported for whole sample, including Dutch case study

[9] Only the 24 participants living in conventional housing were included in this systematic review

[10] Also includes students, landlords, and officials, whose results were not included in the systematic review.

[11] Age data includes year-round residents only

[12] Race/ethnicity data includes all groups

[13] Tenure data includes year-round residents only

[14] Gender data includes all groups

[15] Demographic data only available for individual interviews

[16] Participants could choose more than one response

[17]Includes continuing-care retirement community residents

### 3.3  Summary of study designs and sample characteristics

Table 1 provides details of the characteristics of each study and sample. 1199 participants were represented in the included studies, with sample sizes ranging from 3 to 267 participants. The mean ages of the samples ranged from 48 to 91 years, and gender was 20 to 100% female, with a median of 77% female. 11% of the studies sampled only lesbian, gay, bisexual, or transgender older adults (Boggs et al., 2017, Bradford et al., 2016, Butler, 2017, King and Dabelko-Schoeny, 2009), but no other studies reported the sexual orientation of their participants.

The included studies were conducted in 16 states. Participants' race/ethnicity was not reported in one third of the studies, and for half of those that did report race/ethnicity the samples were at least 90% white. 20% of the included studies sampled only people of color, with five studies focusing specifically on experiences of immigrant elders, including Mexican American (Crist et al., 2006), Japanese American (Lau et al., 2012), Cambodian refugees (Lewis, 2009), Chinese (Li et al., 2017), and Korean and Hispanic older adults (Steggell et al., 2010).

Of those studies that reported information on participants' living situation, eight study samples (22%) consisted entirely of people living alone. The data presented on housing situation were varied, including information on home ownership, years living in current home, years living in the US, rural vs. urban settings, and type of building, including subsidized or public housing. Seven studies (19%) focused explicitly on people living in rural areas, although "rural" was typically not defined, and six studies (16%) drew from predominantly urban populations.

In terms of socio-economic status, 15 of the 37 included studies (41%) reported education level and 10 studies (27%) reported income. Eight studies (22%) reported that their sample included some participants who had not finished high school, and four studies (11%) focused specifically on experiences of low-income older adults (Bowland, 2015, Kietzman et al., 2012, Kohon and Carder, 2014, White et al., 2015). It is difficult to summarize the income data provided in the included studies since the categories used vary widely, and median national income for older adults in the US depends on retirement status, which was not consistently reported alongside income data in these studies.

Five papers (representing four unique studies) were published in the 1990s, nine in the 2000s, and 24 since 2010. In 16 papers (43%), the authors provided an explicit definition of aging in place in the introduction or methods section. The most frequently used methodological approach was grounded theory (27%); others included content analysis (19%), phenomenology (14%), and thematic analysis (11%). Eight studies (22%) used focus groups for data collection, while all of the others used interviews, and several obtained additional data using photo elicitation and observation.

### 3.4 Quality assessment

The results of the risk of bias assessment using the modified checklist are summarized in Table 2. In more than half of the papers assessed, the philosophical perspective underpinning the research was not stated, so it was not possible to assess congruity between the research philosophy and the methodology. No studies raised concerns about unethical research conduct, but in almost half of the papers there was no evidence of formal ethical approval having been granted. The other major area of omission related to reflexivity; only 10 studies (27%) included a statement locating the researcher culturally or theoretically, and in just 11 studies (30%) was there acknowledgement of the influence of the researcher on the research and vice versa.

In spite of these concerns, all of the included studies were judged to be of satisfactory quality due to their use of appropriate research methods overall and presentation of sufficiently rich data, and so all were incorporated into the meta-ethnographic synthesis.

As outlined in our CERQUal Evidence Profile for this systematic review (see Supplement), we assessed confidence in our review findings as moderate for four findings and high for eight findings. The primary concerns affecting confidence in our results relate to the absence of reporting on positionality and reflexivity in many of the included studies, as well as the fact that some findings were supported by a smaller number of studies than others.

### 3.5 Meta-ethnography results

Figure 2 provides a visual summary of the key constructs in the model of aging in place generated by our meta-ethnographic synthesis. Table 3 displays the relevant first-, second-, and third-order constructs. We found aging in place to be an active, dynamic process, in which experiences are informed by the balance between threats and agency (Table 3). Older adults have to deal with unpredictable threats to three interconnected core experiences of aging in place: identity as an older adult, connectedness with others, and sense of place. The capacity to respond to these threats and maintain important elements of their daily lives while aging in place is conceptualized as agency in this model. A few fortunate or resource-rich older adults aging in place experienced high levels of agency and were able to achieve their preferences across all three of the core experiences: identity, place, and connectedness. Many others had to negotiate, reprioritize, and sacrifice important aspects of their lives in order to sustain aging in place. For those in inappropriate or unsafe housing, continuing to age in place was not a choice – if they could, they would have moved elsewhere. As such, it is important to understand experiences of aging in place within the context of older adults' ability to choose between alternative options in response to specific threats to their experiences.

**Agency—**"Agency" is defined in this model as the capacity of older adults to make choices about their lives, regarding both the overarching question of whether to age in place or move to a supportive institutional setting, as well as everyday choices about what aging in place looks and feels like in practice. The balance between resources available to each individual and restrictions on their ability to make choices determined the level of agency they experienced in relation to aging in place. Important resources for people aging in place

included personal financial stability, social connections, and local services. The use of these resources was restricted by financial constraints, discrimination, lack of information, and cultural or language barriers. Reluctance to burden family members also limited the options available to people aging in place. When their level of perceived agency was outweighed by the threats they were facing, people aging in place were left feeling insecure or stuck, with limited options. For these older adults, a lack of agency over their circumstances resulted in a significant gap between their ideals or preferences for aging in place and the reality of their lived experiences.

**Identity as an older adult—**"Identity" within this conceptual model relates to a person's sense of self as they age in place, particularly in terms of their perceived independence and competence and their changing social roles. Threats to identity included experiencing changes in their health and function and needing assistance with everyday activities. For some, such changes were less distressing as they could be integrated in their overall sense of being an older person and transitioning into a different stage of life, particularly for those who felt part of a strong community, However, for others the loss of valued roles and responsibilities undermined or destabilized their self-image. Agency is closely related to identity for people aging in place, since experiencing reduced control over one's circumstances can trigger feelings of dependence and vulnerability.

**Maintaining a positive sense of identity while aging in place:** On the individual level, people aging in place focused on preserving and celebrating their independence and freedom, particularly for those living alone (Dye et al., 2011, Hinck, 2004, Keigher, 2000, Krothe, 1997, Li et al., 2017, Porter, 1995, Porter, 1994). Similarly, feeling competent and having a sense of purpose helped people aging in place to maintain a positive sense of self (Black et al., 2015, Heatwole Shank and Cutchin, 2016). At the level of the wider community, cultural influences on self-image were important, including feeling respected as part of a group of survivors, having shared experiences with peers, and drawing on advice passed on from community elders (Black et al., 2015, Krothe, 1997, Powell, 2016).

**Threats to identity while aging in place:** Health challenges and changes to functional abilities constituted particularly important threats to older adults' sense of self while aging in place, since they could force people to give up valued activities and routines (Black et al., 2015, Crist et al., 2006, Kietzman et al., 2012, Lindquist et al., 2016, Porter, 1998, Stevens-Ratchford and Diaz, 2003, White et al., 2015). The example of driving came up frequently, since it was associated with both a literal and a more figurative sense of independence (Black et al., 2015, Cook et al., 2007, Dye et al., 2011, Heinz et al., 2013, Lewis, 2009, Lindquist et al., 2016, White et al., 2015), and home upkeep was also a particular concern (Black et al., 2015, Heinz et al., 2013, Lindquist et al., 2016). Needing help from others could provoke feelings of vulnerability and dependence, as well as fears of discrimination, especially for LGBTQ people aging in place (Butler, 2017, King and Dabelko-Schoeny, 2009).

**Asserting agency in response to threatened identity:** People aging in place responded to threats to identity by focusing on preserved strengths, adapting valued routines, and taking

control of their care needs (Keigher, 2000, Krothe, 1997, Lien et al., 2015, Porter, 1995, Porter, 1994, White et al., 2015). Comparing themselves to others could help people aging in place to focus on their strengths (Heinz et al., 2013, Hinck, 2004, Kohon and Carder, 2014, Krothe, 1997, White et al., 2015), and reflecting on their individual and cultural philosophies on life helped them to accept the changes they were experiencing (Hinck, 2004, Krothe, 1997). Some of those who had to accept outside help could assert agency over their situation by taking on the role of "manager" of their care needs (Crist et al., 2006, Keigher, 2000, Krothe, 1997). However, limited resources and fear of discrimination meant that not all people aging in place had sufficient agency to pursue these strategies.

**Consequences of unmitigated threats to identity while aging in place:** When threats to identity outweighed agency, the consequences included uncertainty, isolation, and avoidance of care, particularly for people who felt that the reality of their situation did not match what they'd hoped for in older age. In addition, those who did accept care but were not able to access sufficient or appropriate support reported unmet needs and experiences of poor care (Butler, 2017, Kietzman et al., 2012, Krothe, 1997).

**Connectedness—**"Connectedness" in the context of aging in place was experienced through in-person socialization, longer-distance connections, and use of technology. Social interactions shaped older adults' sense of being connected to others on an individual level, as well as informing their impressions of how welcoming or hostile their wider community was. Taken as a whole, experiences of connectedness in aging in place were particularly varied, perhaps relating to differences in lifelong preferences for social contact. In turn, the potential threats to preferred connectedness ranged from discrimination and isolation to excessive or unwanted contact from family members, and strategies to address such threats included paying for help at home or choosing technology over human assistance. Connectedness informed sense of agency for people aging in place, since social connections could constitute resources to be deployed in the face of threats, although they could also be restrictive, particularly in the context of challenging dynamics with family and friends.

**Maintaining a positive sense of connectedness while aging in place:** Examples of sustained social connections for people aging in place were typically associated with having lived in the same place for a long time, particularly in rural areas (Heatwole Shank and Cutchin, 2010, Roberts and Cleveland, 2001, Rosel, 2003). For those who were familiar with the wider community, simply seeing people at a distance from a window or porch could evoke a sense of involvement (Birnholtz and Jones-Rounds, 2010, Krothe, 1997, Rosel, 2003, Swenson, 1998). Religious communities, senior centers, and technology could also facilitate connectedness (Birnholtz and Jones-Rounds, 2010, Li et al., 2017, Rosel, 2003, Steggell et al., 2010, Yamasaki, 2015). Reciprocal connections with others were especially valued (Heatwole Shank and Cutchin, 2010, Hinck, 2004, Kohon and Carder, 2014, Roberts and Cleveland, 2001, Stevens-Ratchford and Diaz, 2003, Yamasaki, 2015), and "neighboring" was a specific manifestation of this, involving feeling protected as well as proud to be able to support others. On a broader scale, volunteering and community organizing demonstrated connectedness as well as a sense of purpose and altruism (Black et al., 2015, Dobner et al., 2016).

**Threats to connectedness while aging in place:** Threats to connectedness for those aging in place included changes to a familiar neighborhood environment, functional impairment and increased care needs, and challenges in family relationships, as well as experiences of trauma and discrimination. Technology could also pose a threat to preferred forms of connection, leaving older adults afraid of being left behind or isolated and wary of the intrusion of surveillance into their private space, although some people aging in place tolerated frustrations with technology because they were preferable to having people come into their home. Older adults with increased needs for social support were at particular risk of threats to connectedness; these included trauma survivors living in low-income housing (Bowland, 2015), those who felt the state would not support them (Dobner et al., 2016), rural elders (Dye et al., 2011, Hinck, 2004), people with disabilities (Keigher, 2000, Kietzman et al., 2012), and LGBTQ older adults, who were conscious of not having children to help them (Boggs et al., 2017). Racism and discrimination related to sexual orientation or HIV status could also undermine connections with others.

Threats to connectedness were closely linked to identity for people aging in place, since relationships with others often affected individuals' sense of their roles and purpose in society. Feeling unable to "give back" for help received was a frustrating experience that affected older adults' perception of their value within their community (Heinz et al., 2013, Lau et al., 2012, Lewis, 2009, Li et al., 2017). A specific manifestation of this was seen in family relations, where older adults accustomed to having authority and independence within the family struggled to accept help from younger relatives (Lau et al., 2012, Porter, 1995, Porter, 1994), particularly when the help offered was experienced as overbearing or controlling (Krothe, 1997). Some older adults felt forced to choose between family and friend connections (Cook et al., 2007), and others tried to preserve familiar roles even when family members became caregivers to them. For low-income disabled older adults, Kietzman et al. (2012) found family caregivers to be "a critical component of the consumer network" (p. 329), although their ability to help could be limited by their other obligations.

**Asserting agency in response to threatened connectedness:** Community-level approaches to threats to connectedness while aging in place focused on building community infrastructure. For example, LGBT older adults fearing marginalization expressed a need to "build community before we desperately need it in our old age" (Bradford et al., 2016) (p. 111). On a more personal level, many older adults currently aging in place felt strongly that they would never want to live with their family, preferring to move to an institutional setting in the future rather than impose themselves and disrupt family life. Technology could allow people aging in place to maintain desired levels of connection while avoiding excessive in-person intrusion into their home.

In some cases, experiences of trauma and discrimination made people aging in place actively avoid social interactions in order to protect themselves. Some study authors found that the ability to avoid social time was a benefit of aging in place (Birnholtz and Jones-Rounds, 2010), particularly compared to the nursing home environment (Krothe, 1997, Stevens-Ratchford and Diaz, 2003). In challenging living situations, being able to set boundaries and choose when to interact with others was associated with a sense of agency and control while aging in place.

**Consequences of unmitigated threats to connectedness while aging in place:** Undesired isolation and a lack of social stimulation were the most significant consequences of unmitigated threats to connectedness among people aging in place. This included isolation due to homophobia, xenophobia, or not having people "like you" nearby (King and Dabelko-Schoeny, 2009). These experiences were widespread in studies of immigrants "aging out of place," including Japanese American elders living alone (Lau et al., 2012), Cambodian refugees (Lewis, 2009), and older Chinese immigrants experiencing language barriers, who connected their loneliness to American culture: "In this place [the United States], people don't hang out with each other often." (Li et al., 2017) (p. 4). Two studies of disabled elders' care needs found desire for social time was often a neglected element of formal caregiving (Keigher, 2000), particularly for low-income older adults (Kietzman et al., 2012).

**Place**—The experience of "place" while aging in place occurred at multiple levels, from the home to the neighborhood and even at the national level, for those who had moved to the US from elsewhere in the world. The personal and private nature of the immediate home environment was highly valued but potentially threatened by changes to health and functional ability. For some people aging in place, getting older meant having to accept intrusion into their private space and routines, and for those who feared discrimination or abuse the semi-public spaces of shared corridors or elevators could feel threatening and even dangerous. The sense of familiarity and continuity of place often implied in descriptions of aging in place was absent for some older adults and experienced as negative for others, particularly those whose past trauma was triggered by the place where they were living or who were desperate to be able to move elsewhere but felt stuck in place. Agency was key in determining whether place was experienced as choosing to remain in a positive, familiar setting or being trapped in an unsuitable and undesirable environment.

**Maintaining a positive sense of place while aging in place:** Many studies found the home to be a deeply personal space, shaped by years of construction as well as collecting valued items – this sense of maintaining connection to the physical home space was seen as a crucial benefit of aging in place (Hinck, 2004, Lindquist et al., 2016, Rosel, 2003, Stevens-Ratchford and Diaz, 2003, Swenson, 1998). The home had often been both physically and metaphorically constructed over the years, with some older adults having built their home from scratch or having made modifications to its structures, and others describing how they had filled their home with personally meaningful items: "This house is full of me" (Rosel, 2003) (p. 80). A study of Cambodian refugee elders found some had been able to build their own village, identifying the theme of "*home* and *place* as consisting of physical, sociocultural, and emotional environments" (Lewis, 2009) (p. 388). Home was also associated with maintaining privacy and control over one's life (Krothe, 1997, Lien et al., 2015), as well as treasured occupations and activities (Heatwole Shank and Cutchin, 2010, Stevens-Ratchford and Diaz, 2003, Swenson, 1998). Beyond the immediate home space, familiarity of place extended to local buildings and natural space for those who had lived in the same place for a long time (Hinck, 2004).

**Threats to place while aging in place:** Although the personal home space was often treasured, it could also become a burden. The home environment could reveal participants'

functional struggles and disrupt social connections by prompting family members to try to intervene, whereas home upkeep had previously been a source of pride and self-reliance (Cook et al., 2007). Needing external help risked disrupting the home space, transforming personal items from treasured "companions" to markers of identities that put their owners at risk of discrimination and making the home feel like a workplace rather than a private space, particularly for LGBTQ older adults (Bradford et al., 2016, Butler, 2017). For those aging in place in challenging settings, the boundary spaces between private and public space constituted a particular threat to their wellbeing, in terms of potential violence and discrimination (Boggs et al., 2017, Bowland, 2015, Kohon and Carder, 2014). The threat of harm was especially prominent for marginalized older adults and those living in public housing, compounded by the fact that these older adults typically did not have the resources to move elsewhere.

On the neighborhood level, concerns about local physical infrastructure were a recurrent theme since they could render valued aspects of place inaccessible, particularly in terms of walkability (Black et al., 2015, Dobner et al., 2016, Dye et al., 2011) and transportation (Black et al., 2015, Heinz et al., 2013, King and Dabelko-Schoeny, 2009, Lien et al., 2015, Lindquist et al., 2016, Roberts and Cleveland, 2001, White et al., 2015). Being older and spending more time at home could transform the experience or perception of the neighborhood; for example, living in an area with many young families could become a lonely experience for an older adult, since their neighbors were usually elsewhere during the day, and changes in land use and local demographics could also be alienating and unsettling (Cook et al., 2007).

**Asserting agency in response to threatened sense of place:** People experiencing threats to their sense of place asserted agency by making changes to their environment. Within the home, these included significant remodeling to kitchens and bathrooms as well as simple reorganization to facilitate daily routines (Lien et al., 2015). Community organizing and efforts to promote infrastructure building could change the nature of place in a broader sense (Dobner et al., 2016), and one study of Cambodian refugees found they were able to find meaning in place by recreating Cambodian village life (Lewis, 2009).

**Consequences of unmitigated threats to place while aging in place:** When threats to place could not be managed, older adults experienced place as unfamiliar, unsafe, or no longer private. LGBTQ older adults fearing discrimination were forced to hide important items marking their identity in order to "de-gay" their homes before paid helpers came in, in a demonstration of the interconnectedness of identities, connectedness, and place for people aging in place (Bradford et al., 2016, Butler, 2017). In a study of African American trauma survivors living in low-income housing, Bowland (2015) described the communal spaces as feeling unsafe for participants, due to experiences of harassment, traumatic stress, and witnessing violence and death, as well as the potential for addiction to be triggered by others' smoking, drinking, and drug use. Aging in place in public housing meant being exposed to surveillance and excessive intervention from the state, as well as a sense that other residents were watching and making assumptions about who was visiting them (Kohon and Carder, 2014). These examples demonstrate the intersection of place, connectedness,

and identity for people aging in place: experiences of discrimination and marginalization throughout the life course were exacerbated as people became more dependent on their home environment and less able to resist negative external forces.

## 4. Discussion

### 4.1 Summary of findings

The purpose of this systematic review and meta-ethnography was to synthesize qualitative research on experiences of aging in place in the US. Our primary finding relates to the dynamic nature of aging in place, driven by the tension between threats and agency across the three core experiences of identity, connectedness, and place, as well as the balance of resources and restrictions that determine an individual's sense of agency (Figure 2). In contrast to widely used definitions of aging in place that imply passively remaining in a positive and familiar setting, we found that people aging in place engaged in significant work to cope with unpredictable needs and challenges by changing their mindset, adapting their home environment to accommodate new needs, and finding different ways to connect with important people in their lives. Where threats to aging in place outweighed an individual's sense of agency, the consequences included feelings of uncertainty, isolation, and dislocation.

Our meta-synthesis resulted in a model of aging in place as a dynamic process of balancing threats and agency in the context of experiences of identity, connectedness, and place. Two existing conceptual models focus specifically on aging in place: Cutchin's theory of mediated aging-in-place (Cutchin, 2003), and Ahn, Kang, and Kwon's model of aging in place as intention (Ahn et al., 2019). Neither of these models was developed through a systematic review process: Cutchin drew on the results of a qualitative study, and Ahn and colleagues describe a review of theoretical and empirical literature which does not seem to have involved a systematic process, generating hypotheses that they tested through a quantitative survey. Each of these models involves features of our Dynamic Tension Model of Aging in Place, including instability and an understanding of experiences as informed by sense of person, place, and connection. However, their narrow *a priori* attention to service provision and intention respectively does not allow for theorization on how different experiences of aging in place are shaped and how they relate to each other. As a result, these models of aging in place are limited in their scope and applicability. In contrast, our Dynamic Tension Model of Aging in Place was informed by a systematic review of qualitative studies, contributing a comprehensive, integrated model that incorporates both the nature of the core experiences of aging in place and the processes that shape them and hold them in tension.

Our holistic model addresses a gap in the existing systematic review literature in this field. The two previous systematic reviews specifically about aging in place focus on technologies, without considering how these relate to other experiences of aging in place. Peek et al. (2014) grouped qualitative, quantitative, and mixed-methods studies into descriptive themes, including concerns, benefits, needs, and alternatives in relation to technology. In their conceptual model these themes were all connected to the outcome of pre-implementation acceptance, but the authors did not model the interactions between them. This review also

included a study conducted in continuing-care housing, since here aging in place was seen as an attribute of the types of technologies considered rather than being associated with a particular living setting. Graybill et al. (2014) review of cost-effectiveness of aging in place technologies, defined as home and environment modifications and telemedicine, included only economic evaluation studies, meaning that their findings do not contribute a conceptual understanding of experiences of aging in place. However, they drew useful conclusions on the need for higher-quality research as well as a more comprehensive approach to outcomes including quality of life for people aging in place. The scope of our systematic review, integrating evidence from a wide spectrum of experiences, provides a comprehensive and holistic model of aging in place.

Although the US older adult population is becoming more diverse, the included studies in this meta-ethnography were limited in their representation of geographic and racial/ethnic diversity. This is a concern in the context of the rapidly growing literature on the impact of life-course racism on health and aging (Gee et al., 2019), and it reflects the underrepresentation of communities of color in research in general. It is crucial to include diverse older adults in the literature on aging in place and to ensure that their unique experiences and needs are represented. "Aging out of place" has become an increasingly important concept in gerontological literature over the past decade, referring to experiences of aging for immigrant elders (Vespa et al., 2018). Although the concept of aging out of place appears to include institutional settings as well as aging in place, there is shared ground with the Dynamic Tension Model of Aging in Place we present here; a concept analysis of aging out of place for newly arrived immigrants identified loneliness, boredom, and family conflict as the primary consequences for older adults, as well as role loss and nostalgia (Sadarangani and Jun, 2015). More research with diverse populations is needed to explore how specific experiences including immigration, discrimination, and culture intersect with underlying common processes involved in aging in place.

## 4.2  Strengths and limitations

A key strength of this systematic review is the breadth of its scope; to the best of our knowledge, this is the first review to systematically examine the holistic experience of aging in place rather than focusing on an isolated aspect such as technology. This was facilitated by our use of broad search strategies for six bibliographic databases, carefully designed with a specialist librarian to increase sensitivity. Our specific focus on aging in place in the US also constitutes a strength, since our findings are situated in a common context that facilitates comparison and translation of constructs across studies. In addition, we aimed to maximize the validity of this review through careful attention to our professional and personal experiences relating to aging in place, exploring together how these might affect our conceptual thinking and reflexively interrogating our emerging model against our prior assumptions.

Despite the strengths of this systematic review, several limitations must be acknowledged. First, we confined our search to peer-reviewed studies published in English. Therefore, our findings might not be generalizable to non-English speakers. Second, grey literature was not searched in this systematic review, meaning that there may be additional sources of relevant

data that were not included here. Third, qualitative synthesis is a creative, interpretive process, and given that definitions of aging in place vary, another team might have selected different articles and generated different meta-ethnographic findings. To address potential sources of bias, we designed this review following best practice protocols and using multiple strategies to increase rigor and reproducibility.

### 4.3 Conclusions

This systematic review and meta-ethnography contributes a novel conceptual model of aging in place in the US, highlighting dynamic processes shaped by the tension between agency and threats to identity, connectedness, and place. Our findings suggest directions for future research, including exploring aging in place in diverse populations and evaluating how the provision of services could bolster agency and help people aging in place to counterbalance threats to their preferred experiences. Drawing on this conceptual model may help nurses and other health professionals to understand individual trajectories of people aging in place and provide person-centered support.

### 4.4 Addendum

We conducted the original literature search for this systematic review in May 2018. In November 2019, after the manuscript was accepted for publication, we repeated the literature search to identify relevant literature published since May 2018. We located one new study that met all of our eligibility criteria (Strommen and Sanders, 2018). Given the growing importance of aging in place in the US, we intend to update this systematic review and meta-ethnography in the next five years.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

## Acknowledgements

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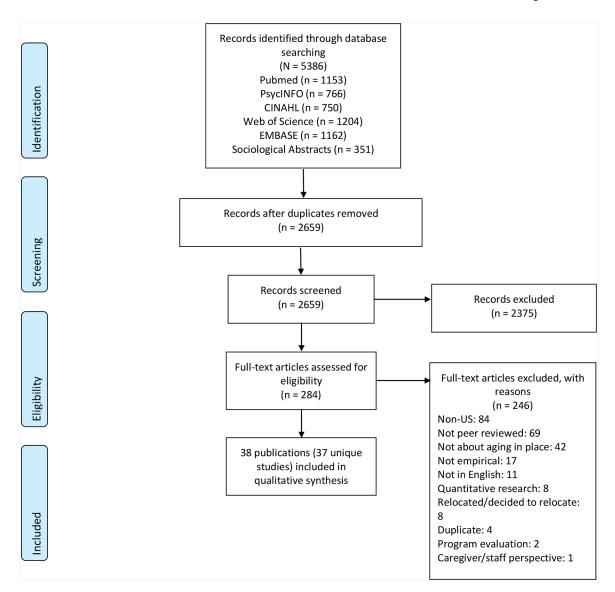
## Contribution of the paper

**What is already known about the topic?**

- The US population is aging, and the older adult population is becoming more diverse and experiencing a high burden of chronic disease.

- Aging in place is typically a preferred option for older adults in the US, compared to institutional settings, although African Americans and lesbian, gay, bisexual, transgender, and queer (LGBTQ) older adults may feel less confident about their ability to age in place.

- Only two systematic reviews specifically about aging in place have been published, both taking a narrow focus on the role of technologies, so a more comprehensive review of experiences of aging in place was indicated.

**What this paper adds**

- In the first systematic review and meta-ethnography on this topic, we found aging in place in the US to be an active, dynamic process

- Our novel dynamic tension model centers on experiences of identity, connectedness, and place, which are informed by the balance between threats and agency while aging in place

- We identified important gaps in the US literature, particularly in terms of the underrepresentation of geographic and racial/ethnic diversity

**Fig. 1.**
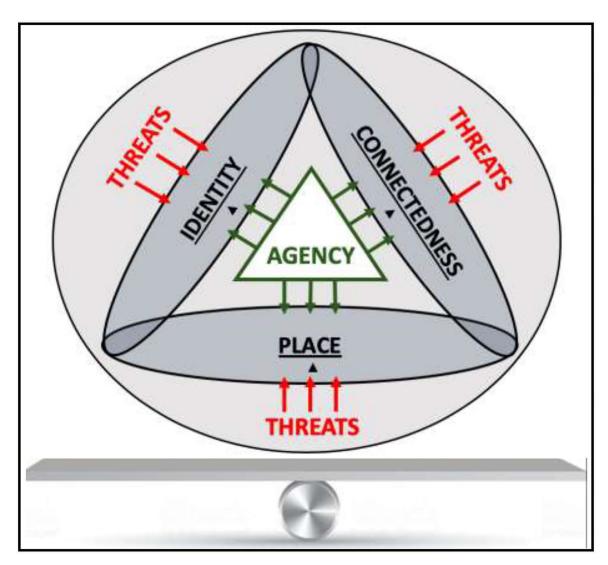PRISMA flow diagram of study selection and exclusion

**Fig 2.**
Conceptual model: Dynamic Tension Model of Aging in Place

**Table 2:**

Joanna Briggs Institute Critical Appraisal Checklist for Qualitative Research, adapted (The Joanna Briggs Institute, 2017).

| Study number | Congruity between stated philosophical perspective and research methodology? a | Congruity between research methodology and research question or objectives? | Congruity between research methodology and methods used to collect data? | Congruity between research methodology and representation and analysis of data? | Congruity between research methodology and interpretation of results? | Statement locating the researcher culturally or theoretically? | Influence of researcher on the research, and vice-versa, addressed? | Are participants, and their voices, adequately represented? | Is the research ethical according to current criteria? Evidence of ethical approval by appropriate body? | Do conclusi... drawn f... from the... analysis... interpre... of the da... |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | × | ✓ | ?c | ✓ |
| 2 | ✓ | ✓ | ✓ | ✓ | ✓ | × | ✓ | ✓ | ? | ✓ |
| 3 | ✓ | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ? | ✓ |
| 4 | ✓ | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ? | ✓ |
| 5 | ? | ✓ | ✓ | ? | ✓ | × | × | ✓ | ? | ✓ |
| 6 | ? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ? | ✓ |
| 7 | ✓ | ✓ | ✓ | ?d | ✓ | × | × | ✓ | ? | ✓ |
| 8 | ? | ✓ | ✓ | ✓ | ✓ | × | ✓ | ✓ | ? | ✓ |
| 9 | ✓ | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ✓ | ✓ |
| 10 | ✓ | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ✓ | ✓ |
| 11 | ? | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ? | ✓ |
| 12 | ? | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ✓ | ✓ |
| 13 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | × | ✓ | ? | ✓ |
| 14 | ? | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ? | ✓ |
| 15 | ✓ | ✓ | ✓ | ✓ | ✓ | × | ✓ | ✓ | ✓ | ✓ |
| 16 | ? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ? | ✓ |
| 17 | ? | ✓ | ✓ | ✓ | ✓ | ✓ | × | ✓ | ✓ | × |
| 18 | ✓ | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ✓ | ✓ |
| 19 | ? | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ✓ | ✓ |
| 20 | ? | ✓ | ✓ | ✓ | ✓ | ✓ | × | ✓ | ✓ | ✓ |
| 21 | ? | ✓ | ✓ | ✓ | ✓ | ✓ | × | ✓ | ✓ | ✓ |
| 22 | ? | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ✓ | ✓ |
| 23 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 24 | ✓ | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ✓ | ✓ |
| 25 | ? | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ✓ | ✓ |
| 26 | ? | ✓ | ✓ | ✓ | ✓ | × | × | ?e | ? | ✓ |
| 27 | ✓ | ✓ | ✓ | ✓ | ✓ | × | ✓ | ✓ | ✓ | ✓ |
| 28 | ? | ✓ | ✓ | ✓ | ✓ | × | ✓ | ✓ | ✓ | ✓ |
| 29 | ? | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ? | ✓ |
| 30 | ✓ | ✓ | ✓ | ✓ | ✓ | × | × | ✓ | ✓ | ✓ |
| 31 | ? | ✓ | ✓ | ✓ | ✓ | ✓ | × | ✓ | ✓ | ✓ |

| Study number | Congruity between stated philosophical perspective and research methodology? *a* | Congruity between research methodology and research question or objectives? | Congruity between research methodology and methods used to collect data? | Congruity between research methodology and representation and analysis of data? | Congruity between research methodology and interpretation of results? | Statement locating the researcher culturally or theoretically? | Influence of researcher on the research, and vice-versa, addressed? | Are participants, and their voices, adequately represented? | Is the research ethical according to current criteria? Evidence of ethical approval by appropriate body? | Do conclusi drawn fi from the analysis interpre of the da |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | ? | ✓ | ✓ | ✓ | ✓ | ✕ | ✕ | ✓ | ? | ✓ |
| 33 | ? | ✓ | ✓ | ✓ | ✓ | ✕ | ✕ | ✓ | ✓ | ✓ |
| 34 | ? | ✓ | ✓ | ✓ | ✓ | ✕ | ✓ | ✓ | ✓ | ✓ |
| 35 | ? | ✓ | ✓ | ✓ | ✓ | ✕ | ✓ | ✓ | ✓ | ✓ |
| 36 | ? | ✓ | ✓ | ✓ | ✓ | ✓ | ✕ | ✓ | ✓ | ✓ |
| 37 | ? | ✓ | ✓ | ✓ | ✓ | ✕ | ✓ | ✓ | ? | ✓ |

[a] Response options: yes ✓; no ✕; unclear ?.

[b] KP = key paper; SAT = satisfactory; FF = fatally flawed.

[c] This question marked "unclear" if no formal ethical approval reported but no ethical concerns identified.

[d] Methodology unclear.

[e] Unfamiliar research tradition – difficult to assess.

**Table 3:**

Meta-ethnography translation table

| Third-order construct | Second-order constructs | | First-order constructs[23] | Source study numbers |
|---|---|---|---|---|
| Agency | Choices | Thinking about future choices | "I don't want to institutionalize myself unless it is absolutely necessary, but I'll have sense enough to know if I can't do it anymore." (Krothe, 1997) (p.221) | 2, 3, 5, 8, 12, 23, 31 |
| | | Having few options | "I can't find another place that's affordable, so I'm like a captive. I really feel trapped." (Kohon and Carder, 2014) (p. 50) | 12, 19, 22, 26, 31 |
| | Resources and restrictions | Availability and appropriateness of local services and resources | "Right now, the only option, if you are in pretty bad shape, is to call 911. That is kind of an extreme." (Dye et al., 2011) (p. 85) "Living in the suburbs, I have little association with other Nikkei. Everything I do is with Caucasians (hakujin)…There are no [adult day care or cultural activities for Nikkei] out there." (Lau et al., 2012) (p. 157) | 2, 6, 12, 17, 19, 20, 21, 23, 26, 27, 28, 29, 34, 35, 36, 37 |
| | | Financial restrictions | "I have expensive health insurance with a very high deductible. Therefore, I avoid [the] doctor except when absolutely necessary." (King and Dabelko-Schoeny, 2009) (p. 18) | 5, 12, 17, 19, 22, 26, 31, 35, 36 |
| | | Lack of information | "I have found a lot of information that I have also passed on to others … you'll be surprised on what's available to you, but you got to get out there and ask for it." (Black et al., 2015) (p. 234) | 2, 23, 31, 36 |
| | | Not wanting to burden others | "My children should have their own life," […] "I don't think it's sensible for an older person to bunk up on their kids … it spoils their life." (Krothe, 1997) (p. 221) | 2, 3, 4, 9, 16, 19, 20, 36 |
| Identity as an older adult | Positive experiences of identity while aging in place | Enjoying independence and a sense of purpose | "I'll be doing as I please and not have to report everywhere I go, before I go, I mean, or ask." (Porter, 1998) (p. 404) "Best part about living at home is hanging onto your independence" (Hinck, 2004) (p. 784) | 1, 2, 3, 5, 9, 15, 16, 17, 23, 26, 30, 36 |
| | | Accepting age-related challenges | "It's just down where I had a vertebra broke right in the lower part of my back. I guess at my age, it's nothing unusual." (Hinck, 2004) (p. 785) | 9, 18, 23, 26, 36 |
| | | Identifying as part of a valued community | "Dignity is being recognized as a full adult who is due respect, whatever the physical condition or appearance." (Black et al., 2015) (p. 232) | 6, 7, 9, 13, 22, 23, 27, 28, 29, 34, 36 |
| | Threats to identity | Health and functional challenges | "And when I got sick, and had the stroke I couldn't put my feet like this like I used to, you ain't have the strength to stand up and it was hard. We've got pride!" (Crist et al., 2006) (p. 115) | 9, 10, 17, 18, 19, 23, 24, 25, 26, 31 |
| | | Needing help from others | "And then to talk about the reality, that I may need, sooner or later, I may need help from people that aren't accepting or prepared, or even knowledgeable." (Boggs et al., 2017) (p. 1548) | 2, 3, 5, 9, 10, 12, 17, 18, 19, 20, 21, 31, 34, 35 |
| | | Stopping driving | "I can't drive my car to go to physical therapy and I have to ask somebody to go anyplace and that's aggravating." (Heinz et al., 2013) (p. 47) | 11, 12, 13, 17, 21, 23,31 |
| | Approaches to threats to identity | Taking control of care/negotiating relationships with caregivers | [importance of being able] "to supervise the boy who does the yard work." (Krothe, 1997) (p. 219) | 2, 5, 10, 15, 17, 20, 35 |
| | | Focusing on strengths and preserved abilities | "I do not want to focus on [Alzheimer's]. I do not need to. So far, we are going along fine." (Beard et al., 2012) (p. 4) | 1, 2, 5, 6, 7, 8, 9, 10, 15, 17, 18, 19, |

| Third-order construct | Second-order constructs | First-order constructs[23] | | Source study numbers |
| --- | --- | --- | --- | --- |
| | | | | 23, 25, 26, 30, 31, 36 |
| | | Adapting tasks and routines to new limitations | "I've worked it out. I really don't stand up and walk up the steps. I kind of crawl up. I put my hands on a couple of steps up. I don't touch my knees. I put my feet down. You can learn how to do something if you have to." (Hinck, 2004) (p. 787) | 1, 6, 8, 9, 15, 18, 19, 23, 25, 26, 30 |
| | | Drawing on personal and cultural philosophies of aging | "We Chinese are like this. You don't need … 10 abalones….You cannot eat them all." (Li et al., 2017) (p. 4) | 2, 9, 16, 23, 27, 30, 31, 34, 36 |
| | Consequences of unmitigated threats to identity | Uncertain and disrupted identity | "I feel like a useless slug. Sit upstairs, sit on my ass, watch TV…bitch about my aches and pains, and… the doctor has me taking so many pills, I'm surprised I don't light up at night." (Kohon and Carder, 2014) (p. 50) | 11, 13, 22, 31, 33 |
| | | Avoiding care | "I am completely alone; I have no one to help with home care, and I would much rather die than be dependent on another individual." (King and Dabelko-Schoeny, 2009) (p. 19) | 5, 9, 12, 18, 31, 34 |
| | | Receiving poor quality care | "So there wasn't a lot of eye contact. It didn't feel like much of a caring connection. And it is only later, as I reflect back, you know, she may have been uncomfortable with our relationship." (Butler, 2017) (p. 390) | 2, 5, 10, 12, 20, 31, 34, 35 |
| Connectedness | Positive experiences of connectedness while aging in place | Feeling like part of a strong, intergenerational community | "The ones who are seniors now, are the ones who paved the way for younger folks to be able to be out, to at least have some of the safeguards and security to be more open about sexual orientation." (Boggs et al., 2017) (p. 1550) | 6, 7, 9, 13, 14, 15, 22, 23, 27, 28, 29, 30, 34, 37 |
| | | Appreciating longer-distance connections (technology, people-watching) | "I sit in this chair most of the time. I can see everything from here." (Rosel, 2003) (p. 83) | 2, 4, 6, 7, 9, 14, 16, 21 |
| | | Experiencing connection through religion | "It's really nice to have a bunch of older friends like that because your kids grow up and go in different directions. At least with these gals, we've got things that we do together. We get to visit with different people from church over coffee or lunch, which is nice." (Yamasaki, 2015) (p. 70) | 7, 24, 27 |
| | | Volunteering and reciprocity | "I wouldn't know what to do myself if I weren't involved with helping people." (Rosel, 2003) (p. 87) | 6, 7, 8, 9, 13, 15, 22, 23, 24, 27, 29, 37 |
| | Threats to connectedness | Trauma and discrimination | "I observe women who suffer abuse—black eyes. I hear a lot of verbal abuse." (Bowland, 2015) (p. 176) | 12, 13, 22, 23, 24, 28, 34, 35, 36 |
| | | Technology | "I am upset with people that are using it [computer] as a social contact. I mean it seems to me to be kind of counterproductive." (Heinz et al., 2013) (p. 47) | 14, 16, 21, 23 |
| | | Health and sensory issues | 'When I was diagnosed with Alzheimer's … I told everybody … so everybody knows I have it. If I had to do it over again, I'd tell … just a few of my close friends. Because people look at you differently … you just aren't looked on as capable anymore …" (Black et al., 2015) (p. 235) | 8, 12, 18, 22, 23, 27, 28, 31, 36 |
| | | Family dynamics | "I may be ready to go to bed by the time it's possible to reach our son. And if we want to reach him, we don't want to bother him at work." (Birnholtz and Jones-Rounds, 2010) (p. 148) | 1, 2, 3, 11, 12, 14, 19, 20, 21, 34 |
| | | Neighborhood demographics and infrastructure | "During the day time there is nobody there except for two houses— where I live and [one other]. So that is probably one of the most lonesome areas; when you know there are those houses and there's nobody in | 11, 12, 13, 20, 21, 23, 29, 32, 33, 37 |

| Third-order construct | Second-order constructs | First-order constructs[23] | | Source study numbers |
|---|---|---|---|---|
| | | | them during the day because all the families are gone." (Cook et al., 2007) (p. 207) | |
| | Approaches to threats to connectedness | Community organizing and infrastructure building | "A lot of the reasons [for the neighborhood collective] were people recognizing that we are going to need to age in place, and we are not going to be able to drive around, and we want to know our neighbours, | 13, 22, 23, 27, 28, 29, 37 |
| | | | and we want to create friendships, and all of that. And this was a way to build social capital in just this little part of the neighbourhood." (Dobner et al., 2016) (p. 205) | |
| | | Setting boundaries and avoiding social time when needed | "I treasure my naps. I take a nap every day and I will turn the ringer off on the phone. (Birnholtz and Jones-Rounds, 2010) (p. 149) | 2, 3, 14, 24, 34 |
| | | Making use of technology | "I actually hoped that this kind of device would be created and I want one. As I age and become lonely, it is necessary to have this kind of device to go through daily lives". (Steggell et al., 2010) (p. 443) | 14, 16, 21 |
| | Consequences of unmitigated threats to connectedness | Isolation/lack of social stimulation (unmet social needs) | "I have no friends here and no one to help." (Bowland, 2015) (p. 176) | 5, 11, 12, 13, 17, 19, 20, 21, 22, 23, 24, 36, 37 |
| Place | Positive experiences of place while aging in place | Home as personal | "This house is full of me." (Rosel, 2003) (p. 80) | 4, 5, 6, 7, 8, 9, 13, 19, 25, 31 |
| | | Home as private | 'We don't want to leave it because this is where we live, and we like our privacy and I like having the yard to work in. So I don't know how we'll ever leave this place." (Lien et al., 2015) (p. 11964) | 2, 4, 8, 9, 14, 16, 20, 25, 34 |
| | | Familiar, accessible neighborhood | "'Course we lived here so long that I know what we grew in this field and that field. And it just does me good to just get out." (Hinck, 2004) (p. 784) | 4, 6, 7, 9, 11, 13, 14, 15, 25, 27, 29, 30 |
| | Threats to sense of place | Issues with home upkeep | "There's more upkeep as your home gets older." (Cook et al., 2007) (p. 209) | 1, 2, 4, 8, 9, 11, 15, 21, 23, 25, 26, 31 |
| | | Home care workers entering private home space | "I think one issue would be if you thought that somebody was coming who was not in the gay community, you're going to have to de-gay your house." (Bradford et al., 2016) (p. 113) | 2, 5, 9, 10, 12, 20, 28, 34, 35 |
| | | Discrimination, violence, and trauma | "I didn't know that men harassed women and people broke into each other's apartments until I came here." (Bowland, 2015) (p. 176)<br>"I want to move away from … due to guns and knife fights." (Bowland, 2015) (p. 176) | 12, 13, 20, 22, 23, 24, 33, 34, 35, 36 |
| | | Financial concerns | "I simply need to have health coverage so I do not lose my homestead should anything happen to me." (King and Dabelko-Schoeny, 2009) (p. 18) | 8, 12, 19, 22, 23, 31, 32, 35 |
| | | Problems with neighborhood environment | "This area has almost been given to the university for student rental. I often think that I'm a thorn in somebody's side because I live here." (Powell, 2016) (p. 546) | 11, 12, 13, 17, 20, 21, 23, 29, 33, 34 |
| | Approaches to threats to sense of place | Making adaptations to home and routines | "The showerhead in the master bathroom was too difficult for me to adjust, so we put in the removable showerhead on a bar where the height can be adjusted. We also remodeled the kitchen." (Lien et al., 2015) (p. 11966) | 1, 2, 6, 8, 9, 11, 15, 18, 19, 23, 25, 26, 28, 30, 35 |
| | | Community organizing and village building | "We have to roll up our sleeves and figure out how we are going to get our needs met." (Dobner et al., 2016) (p. 204) | 13, 22, 27, 28, 29, 37 |

| Third-order construct | Second-order constructs | | First-order constructs[23] | Source study numbers |
|---|---|---|---|---|
| | Consequences of unmitigated threats to sense of place | Feeling out of place | "The house is mine, I bought it, but sense of belonging, well, not much" (Li et al., 2017) (p. 4) | 11, 12, 13, 20, 22, 33, 36 |
| | | Experiencing place as unsafe or no longer private | "When I get home, I stay home, I don't want to run into any of these people, I don't want to be trapped on the elevator with anyone …you wouldn't want anybody to know that you were gay in this building. You would be in trouble; there would be consequences." (Boggs et al., 2017) (p. 1549) | 13, 16, 20, 22, 24, 33, 34 |
| | | Feeling trapped | "It's like residents are being warehoused here." (Bowland, 2015) (p. 176) | 13, 22, 23, 24, 31 |

[23] Participant quotations