Department for Culture, Media & Sport

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Independent report

Tackling loneliness evidence review: main report

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Contents

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Overview

Background

In 2018, some of us (Barreto, Matthews, Qualter, Victor) contributed to an ESRC Think Piece on Loneliness and recommended that there needed to be increased investment from UKRI for research examining loneliness. We highlighted key gaps in the evidence and suggested those areas for priority funding. Since then, there has been increased investment for research on loneliness from UKRI and some of those evidence gaps have or are being filled. However, some have not been addressed and there remain important gaps to fill.

In the 2018 ESRC Think Piece, the following recommendations were made: (1) the monitoring of loneliness and its drivers and consequences across the population and among specific subgroups, (2) the capturing of changes in prevalence or groups most affected by transient loneliness, with a view to understanding when and how it becomes chronic, (3) comparisons of local estimates of loneliness with national estimates, and (4) greater measurement consistency for population level surveys. In the first section of our review, we discuss the extent to which those recommendations have been endorsed, with new funding and knowledge made available.

Objectives of the report

We have updated what we know about loneliness since the 2018 Loneliness Strategy and related evidence review. We have done this through a voluntary network of experts, not a formal review. We did this to work out what we still need to know and how to start. More specifically, to achieve our aims, we have done the following:

- critically reviewed the literature on loneliness, using a life-span perspective, locating relevant and high-quality evidence
- identified from that review the evidence gaps in the field
- provided recommendations for prioritising those evidence gaps to inform decision making
- identify whether there are pre-existing datasets that enable those evidence gaps to be filled

Aims of the report

1. To establish the evidence gaps in the field of loneliness, including those related to interventions.

2. To examine what existing evidence can be built on and what needs to be developed from first principles.

3. To agree which evidence gaps should be prioritised.

4. To establish which pre-existing quantitative datasets could be used to address the prioritised evidence gaps, and identify which prospective cohort studies would be enhanced by inclusion of a measure of loneliness.

Audience

As the literature on loneliness continues to expand, it is becoming increasingly difficult to locate all relevant evidence. Non-specialists, including policymakers, voluntary sector organisations and practitioners, third sector funders, research sector funders, clinicians, people with lived experience of loneliness, and academics in other fields, may find that particularly difficult. Furthermore, when selecting evidence to inform decision-making, non-specialists may lack the resources to critically appraise all available evidence and may, instead, treat it all equally, or use measures of rigour that are questionable and/or subjective (e.g. journal impact factor, citation count, author reputation), or simply view evidence in the same way and as equal in its significance and robustness. But, published evidence in the field of loneliness varies considerably in reliability, strength, and scope, and that presents challenges to those wishing to undertake evidence-based decision-making. Further, it is also hard to appraise the various non-peer reviewed reports in the field, some of which do not make the strength of evidence clear to the reader. Further still, some evidence is also hidden, with impacts on loneliness measured in studies as a secondary outcome of an evaluation.

What we know and what we do not know about loneliness

Have the gaps identified in 2018 been filled?

In reviewing our 2018 recommendations, we found that some of the identified gaps in the research evidence have been filled. We provide a brief update on the research evidence in those areas below, but also the notion that there are still clear gaps in the evidence base.

Drivers and consequences of loneliness
First, we find extensive examination of the drivers of loneliness for UK citizens, with exploration of those aged over 16 years in population surveys since 2018. Inclusion of loneliness items in the Community Life Survey has highlighted that certain individual characteristics are associated with reports of higher loneliness, including being aged 16 to 24 years, female, single or widowed, having a health condition described as “limiting”, renting, reporting feeling less strongly that they belong to their neighbourhood, and little trust of others in their local area (ONS, 2018). Other work using a different loneliness scale with UK citizens (BBC Loneliness Study; Barreto et al., 2021a) reported similar findings regarding age, relationship status, health, and neighbourhood belonging, and trust. There is also work on the correlates of loneliness among adolescents using population data, with work linking higher loneliness to poorer academic performance, school liking, and school trust (HBSC English data; Qualter, Hennessey, et al., 2021). Previous and current work is focused mainly on individual factors that predict loneliness, and there is an absence of work that looks at community level risk factors, and a limited amount that looks at place-based impacts. Thus, there is still a need to look at neighbourhood and place-based factors that might make people vulnerable to loneliness, or that interact with individual factors to predict loneliness (see section 4.6).

Loneliness is often viewed as a ‘red flag’ that signals someone is not doing well. It can be an outcome of personal or social circumstances, and/or a risk factor for wellbeing. Indeed, there is now exhaustive work linking loneliness to poorer physical health during adulthood, with that work consolidated in meta-analyses and reviews (Holt-Lunstad et al., 2015; Valtora et al., 2016), offering important evaluation of study quality and overall findings. Exploration of the relationship between loneliness and poor health during adolescence and early adulthood using population surveys is limited, but the work that has been done shows loneliness is associated with increased likelihood of asthma, migraine, osteoarthritis, rheumatoid arthritis,

hypertension, slipped disc/back pain, and tinnitus (Christiansen et al., 2021), poor mental health (Matthews et al., 2018), and poorer self-rated health, higher frequency of headache, stomach ache, backache, difficulties sleeping, greater sleep disturbance, and more instances of feeling tired in the morning among 11-15 year old school-children (Eccles et al., 2020; Qualter, Hennessey, et al., 2021). There is also work currently being conducted that synthesises all the evidence on health and loneliness in non-clinical groups across age and genders, with the meta-analyses available later this year (Eccles, Maes, et al., 2021) and other work examining the role of culture and age in explaining the link between loneliness health risk behaviour (Barreto et al. 2021c). Further, UKRI has invested funding through projects with the What Works Wellbeing, that (1) explore the relationship between loneliness, mental health, and wellbeing among adolescents, and (2) identify whether the relationship between social isolation, loneliness, and wellbeing varies between generations. Through the Loneliness and Social Isolation in Mental Health Research Network, the UKRI has invested in small-scale projects looking at the pathways between loneliness, social isolation, and mental health in at-risk groups such as the farming community, the LGBT community, older adults with physical health conditions, individuals diagnosed with Obsessive Compulsive Disorder, mothers with postnatal depression, and young people.

Using UK samples, there has been a growth in the amount of work exploring the effects of youth loneliness on education (Qualter, Hennessey, et al., 2021), and employment prospects (Matthews et al., 2018), with adolescents being more likely than their non-lonely peers to be 'below average' academically and less confident in their employment prospects; research also shows that loneliness is linked to unemployment across the lifespan (BBC Loneliness Experiment, 2018; Matthews et al., 2018), with those reporting loneliness being more likely to be** out of work.

The mechanisms linking loneliness and poor outcomes have also been explored for health, with findings showing that higher levels of cortisol at waking and a blunted cortisol awakening response are associated with loneliness in adults (Adam et al., 2006; Steptoe et al., 2004) and adolescents (Jopling et al., 2021). Those results are found across different ages, and are stable, even when controlling for covariates that can influence diurnal trajectories of cortisol. Critically, this pattern of HPA-axis functioning increases risk for adverse mental and physical health outcomes across the lifespan.

There remain some gaps in the published work. Reviews and meta-analyses have been important in highlighting the link between loneliness and poor health and wellbeing, with new primary data showing those same effects for young people ages 11-24 years. However, evidence often comes from cross-sectional studies, where data are all collected at the same time, which, along with the use of different measures of exposure and outcomes across studies, make previous evidence synthesis more problematic than most reviews acknowledge. The need for prospective examination of

loneliness, health, educational and employment outcomes, and wellbeing is still needed for UK samples of different ages. And, that is particularly important when we consider the cost of loneliness to health services.

Also missing, still, is the examination of subgroups other than by regions (ONS, 2021). Recent work led by What Works Wellbeing and Emily Long (University of Glasgow) has highlighted the need to explore the interactions between subgroup characteristics and region as predictors of loneliness, showing that identifying as a sexual minority mattered more for loneliness in some geographic regions than in others, supporting earlier work in the US that highlighted how US State policies regarding sexual minorities affect the link between discrimination and loneliness (Doyle and Molix, 2015). But, there is still not adequate monitoring in a sufficient range of other vulnerable subgroups. For example, while there are English population-based data that show a higher prevalence of loneliness among those reporting a disability compared to those that do not (ONS, 2019), we know little about whether the drivers of loneliness are the same for the two groups, and whether loneliness varies for people with different disabilities (e.g., people with intellectual disabilities, people with autism, people with visual impairments, etc) or those with mental ill-health, who find it harder to overcome loneliness than their peers. Thus, there needs to be further exploration of (1) whether different subgroups report more loneliness than others, and (2) if so, what it is about those subgroups and regions that makes people more or less vulnerable to loneliness.

Changes in prevalence across groups most affected by loneliness

In terms of understanding the prevalence of loneliness, we have seen more data gathered for the UK population since 2018 when we made this recommendation, with the inclusion of loneliness measures in population surveys. Such data have also been collected during the COVID-19 pandemic and the associated lockdowns within the UK, which has enabled the examination of change in loneliness during long periods of social isolation. In our earlier review, we highlighted the need for prevalence figures for all age groups, using representative samples. A significant advance in our understanding is the work on prevalence of loneliness among school-aged adolescents, with exploitation of population data already collected in the UK (HBSC English data and Millennium Cohort Study data), and elsewhere (PISA data 2015, 2018), although none of those data are current. As well as providing prevalence data for adolescence across nations, genders, and socio-economic groups those studies (Qualter, Hennessey, et al., 2021; Yang, Petersen, & Qualter, 2020) showed that loneliness for youth is related to negative social experiences, including bullying from peers and siblings and arguments with parents, supporting other work using UK samples (Matthews et al., 2018). Thus, it appears that loneliness for adolescents is associated with a constellation of adversities, including victimisation and family conflict, that contributes to loneliness. Exploration of data from population surveys have also shown that the rate of loneliness among youth did not change from 2006-2014 (Qualter,

Hennessey, et al., 2021), increased over the course of adolescence (Qualter, Hennessey, et al., 2021), and was associated with self-harm behaviour (Yang et al., 2020).

Missing from the published work is exploration of current prevalence rates for youth, with data being collected in more recent studies that permit comparisons across many age groups. Further, we need longitudinal analyses that examine how and when people come in and out of loneliness, and what predicts whether someone continues to report high levels of loneliness. Such an exploration is crucial if we are to know whether transient loneliness has long term effects or not: should we be working with individuals to increase their current wellbeing, developing their ability to respond to transient loneliness in productive ways, or working with them to reduce the long-term consequences of loneliness? This also raises the question of whether some factors are more likely to elicit transient loneliness (e.g., moving to university) and others (e.g., lack of mobility, lack of transportation) lock people into chronic loneliness. Further, it is essential that surveys include representation from a range of subgroups (for example, different ethnic groups, people with disabilities, those who do not identify either as male or female). This statement about subgroups links us directly back to the first comment and is about ensuring equity of evidence about loneliness across all groups within the UK; it is crucial for understanding who is most affected by loneliness and what the most effective solutions for those groups are likely to be.

When and how does transient loneliness become chronic?
Still missing from the literature is an examination of when transient loneliness becomes chronic. There is one study using a representative sample that has explored the consequences of transient versus chronic loneliness during adolescence (Matthews, et al., 2021) and it shows that loneliness experienced in early adolescence could have lasting implications for outcomes in later years, regardless of whether it persists over time. Other work using data from children showed that those who had reduced loneliness from ages 8 to 11 experienced the same effects of loneliness on poor health as those who experienced chronic loneliness (Harris et al., 2013). Despite that work, there does not appear to have been much attempt to understand how chronic loneliness should be conceptualised. We still do not have a handle on when loneliness becomes a major problem for individuals or whether the predictors of transient and chronic loneliness are distinct. Also, loneliness that is transient is assumed to be non-problematic, but what little work there is suggests that may not be the case. Further, there is a mismatch between the conceptual models of loneliness and the measurement of loneliness: current questionnaires of loneliness measure the frequency of negative emotions and behaviour that accompany loneliness, but the distinction between transient and chronic loneliness is based on duration (how persistent loneliness is). Thus, we need the introduction of other dimensions of loneliness (intensity and duration) beyond frequency into loneliness measurement. Forthcoming research

shows those dimensions to be important (Qualter et al., 2021) for understanding the individual experiences of loneliness.

Qualitative work with lonely people to explore the meaning of loneliness and distinct aspects of the experience is needed across age groups, and that information could be used to develop robust measures of loneliness that measure different components of the loneliness experience. The inclusion of such robust measurements of loneliness in population surveys where data are being collected from the same people over time provide opportunities to explore the different types of loneliness and examine the different socioeconomic circumstances and differential health, work, or education outcomes that might be linked to chronic loneliness compared to transient loneliness. As well as develop robust measures of loneliness that capture the full spectrum of the loneliness experience and collect loneliness data over-time for the same individuals, there is a need for a systematic review of previous theoretical work that explores the time frames for when transient becomes chronic; the duration of time that constitutes chronic loneliness must be explored because it cannot be assumed that chronicity (in terms of duration) fits with the timeframes of data collection for current population studies. There also needs to be a move from looking at loneliness just in terms of frequency, which is measured by our current measures of loneliness, because the distinction between transient/chronic loneliness is about duration while we tend to mainly measure frequency. Intensity of loneliness is also clearly important. So, in any review of transient/chronic loneliness, other dimensions of assessment beyond frequency and duration, need to be considered. We pick up on this idea later in this report.

Comparison of local estimates with national estimates of loneliness

There has been some examination of how place is related to loneliness, with recent geographic mapping of the Opinion and Lifestyle Survey data (ONS, 2021) collected during the COVID-19 pandemic and associated lockdowns in the UK. Findings showed that areas with a higher concentration of younger people (aged 16-24 years) and areas with higher rates of unemployment tended to have higher rates of loneliness during the study period (October 2020 to February 2021); local authorities in countryside areas had a lower loneliness rate than urban, industrial, or other types of area. Using data from 16-24 year olds pre-COVID-19 from the Understanding Society Survey 2017-2019, work by What Works Wellbeing (Marquez, Long, et al., 2022) showed that geographic region accounted for 5-8% of the variation in loneliness, with the effect of gender, sexual orientation, and minority ethnic background on loneliness differing across geographic regions. For example, in some geographic regions, identifying as a sexual minority mattered more for loneliness than in others, suggesting that there are important place-based differences in the experiences of young adults who identify as being of minority sexual orientation. Exploration of place-based effects on loneliness within local authorities is the next step, with examination of whether subgroups are more vulnerable within certain areas than in others.

Findings noted above highlight regional variation in loneliness, and highlight individual vulnerabilities that work with geography, to predict loneliness. That suggests local-level initiatives may be more appropriate in tackling loneliness, rather than wider, less contextualised national efforts. Another next step in this work is to understand the characteristics of place that facilitate connection, including what people need/want from their communities, and what living and workspaces should look like to encourage belonging. Given that the appropriateness of space is defined by individuals, there needs to be subgroup analyses within any work, to understand what encourages connection and for whom. Such work will be particularly important given the expected changes to the living and workspaces post the COVID-19 pandemic.

Greater measurement consistency for population surveys

One of our recommendations in 2018 was the inclusion of an established measure of loneliness into the UK's population surveys, with investment in funding research that then used those data to explore the gaps in the field that we also highlighted. Since then, we have seen the ONS (ONS, 2018) recommend a 3-item adaptation of the UCLA-LS, developed by Hughes et al. (2004), which has been integrated into several UK population surveys. That offers opportunities to address many evidence gaps. But, what is missing from the evidence is whether this measure, with its different response categories to the UCLA-LS or other short versions of the UCLA-LS, is understood by different subgroups of the UK population in the same way.

In a recent exploration of the UCLA-LS and its shorter derivatives, where the four item response categories are used, Panayiotou et al., (2021) showed that the measures where items are understood by different adult age groups in the same way were the UCLA-LS4 (Russell et al., 1980) and Factor 1 of the UCLA-LS9 (Hawkley et al., 2005). Therefore, the age measurement invariance (but also other measurement invariance) of the 3-item measure suggested by the ONS (2018) is unclear, and future work is needed to explore that further. This is particularly urgent, given (1) that item 2 of the ONS recommended loneliness measure ("I lack companionship") was found by Panayiotou et al. to be differentially understood by different aged adults in their study, and (2) is recommended for use with primary-aged children, and their experiences of loneliness are somewhat different to adolescents and adults (Qualter et al., 2015). Of course, one wonders whether loneliness is, indeed, defined in the same way by people of different ages, and, while that is assumed, qualitative work with UK citizens of different ages would provide an important addition to the work in the field.

Where are the evidence gaps in the current research profile of loneliness?

To examine this question, we focus on nine key research themes. We have focused this report on central areas we have reviewed as having important evidence gaps that compromise our understanding of the loneliness experience within the UK.

The need to develop a life course approach to loneliness

Current evidence on the life course approach to loneliness

Early studies of loneliness focused upon specific age groups, predominantly older adults, and was engaged with the cross-sectional analysis of prevalence and identification of individual risk factors. The adoption of a life span approach, that compares prevalence and antecedents for adults of different ages at the same time point, has demonstrated that loneliness is experienced across all age groups (Jopling and Serwanja, 2016; Brown and Munson, 2020). The development of longitudinal studies, such as the English Longitudinal Study of Ageing, enable us to track cohorts of individuals, recruited at different ages, over time and assess changes in loneliness. Longitudinal approaches to studying loneliness offer greater insights than cross-sectional studies because they enable us to examine the stability of loneliness experiences identifying short term transitions in loneliness over a year (Victor et al., 2015) or longer term (Dahlberg et al., 2021). The key strength of longitudinal studies is that we can document changes in scores/prevalence rates (see Yang 2018a, b), but also gather information on how loneliness develops, whether there are different trajectories of loneliness over time, and transitions associated with onset, continuity, or exit from loneliness, and whether subgroups are more vulnerable to chronic loneliness. Mund et al. (2020), in a systematic review of the stability of loneliness across the lifespan, identified 75 longitudinal studies of loneliness. Of those studies, 24 were of older adults (60+), three were with mid-life populations (40-60), two included early midlife (25-40), and ten included young adults (17-25); the rest of the studies were with children/adolescents. The dearth of studies focused upon midlife is evident and there is a clear need for more research with those populations examining the myriad of factors that make people of this age group more or less vulnerable to loneliness, and even ‘pass it on’ to their offspring.

What is a life course approach to loneliness?

A life course approach links adult health and wellbeing outcomes to long term biological, behavioural, psycho-social, and environmental processes. Typically, this approach has been used to examine adult health outcomes and health inequalities in the context of exposure to biological, social, and environmental ‘harms’, especially in childhood. Two models used in life course epidemiology are relevant to the study of loneliness: (1) the critical exposure, and (2) cumulative deficit models. The critical exposure model

posits that negative (or positive) exposures have a differential effect on outcomes if experienced at some ages/development points than others. For example, being widowed, a key loneliness risk factor, may be more impactful if experienced in early adulthood than later life. The cumulative deficit or disadvantage model hypothesises that an individual's outcomes are related to their cumulative exposure to disadvantage, and that those exposures influence short term (transitions) and longer term (trajectories) of health outcomes. Thus, a life course approach to understanding loneliness at a specific life stage, would be linked to both previous experiences of loneliness and other social, environmental, biological, and health factors. This links with the proposal by Spini et al. (2017) that the concept of vulnerability is a more useful framework for investigating loneliness than risk factors, which emphasise the individual rather than the broader context. Vulnerability focuses upon the resources available to prepare for, cope with, and recover from adverse events or changes in circumstances which may result in loneliness. One benefit of a focus on vulnerability in understanding loneliness is that it is a concept applicable to individuals, communities, and societies, and helps focus on factors influencing loneliness beyond the characteristics of individuals. It also meshes with the cumulative deficit/critical exposure perspectives.

Life course studies of loneliness

Life course studies are longitudinal in nature with many starting as birth cohorts and following those populations over time. We identified one 'true' life course study with the outcome of loneliness (in later life). The British Medical Research Council National Survey of Health and Development (NSHD) is a sample of babies born to married mothers in mainland Britain during one week in March 1946 and who have been followed up for almost 70 years. Ejlskov et al. (2019) considered social relationship adversities such as maternal separation, relationship difficulties with friends, family or spouse, divorce, and bereavement during childhood (age<18 years), mid-adulthood (36-53 years), and later adulthood (54-64 years) collected prospectively and how those related to loneliness at age 68 years for 2543 participants. Social relationship adversities experienced throughout the life course were associated with loneliness in later life. More proximal adversities more strongly related to loneliness, and early adversities could be mitigated by close relationships in later life. However, the study did not measure loneliness at earlier stages of the life course, nor did it include broader measures of social engagement, which are key limitations of the study.

Several longitudinal studies have linked loneliness in later life with retrospective recall of adverse events at previous life stages. Nicolaisen and Thorsen (2014) asked their participants aged 40-59 and 60-80 years about three aspects of their childhood: a conflictual parental relationship, prolonged bullying, and economic hardship. For those aged 60+ years, economic hardship and parental relationship predicted loneliness for women but not men; bullying was linked to loneliness among men only. For the

younger age group, economic hardship was not linked to loneliness, but the other two factors were. Kamitya et al. (2014) report data for those aged 65+ years in the first wave of the Irish Longitudinal Study of Ageing and include indicators of early childhood disadvantage (family socioeconomic conditions, a measure of childhood health, and a measure of parental substance abuse) and early adulthood based upon education. The authors conclude that poverty in childhood and parental substance abuse (men only) influence late life loneliness. Merz and de Jong Gierveld (2016) looked at relationships with parents during childhood alongside current family ties in their study in The Netherlands of widows aged 50+. They report that a strong childhood relationship with the father, but not the mother, was protective against loneliness after widowhood as were strong ties with siblings and adult children. When findings are combined, those studies offer some credence to a 'critical exposure' hypothesis that relationships with parents, siblings, parental conflict, parental substance abuse, and bullying as children may enhance vulnerability to loneliness later in life. Cross-sectional studies can locate (older) adult loneliness within the context of previous experiences. Using data from the BBC Loneliness Experiment, Victor et al (2019) reported that 71% of participants aged 65+ years had experienced loneliness in at least one other period of their life, with 9.2% reporting that they had experienced loneliness at every stage of life. Wider application of those types of questions and life course perspectives in routine longitudinal and existing life course cohorts would enable us to generate a life course approach to loneliness rather than one which emphasises age groups/life stages.

The life course approach does not just apply to survey data. Indeed, some experimental work has taken a life course approach to understanding loneliness. Specifically, Pearce et al., (2021) reported that only those aged 25-34 years underperformed on social tasks, choking under pressure, potentially because of their overwhelming need for social connections. Such work is crucial to understand the universality and unique features of loneliness across the life course and at specific life stages (Goossens, Victor, & Qualter, 2021).

Evidence gaps regarding the life course approach to loneliness

There is a need for more exploration of loneliness over time using prospective cohort studies.

Longitudinal studies enable us to document changes in prevalence rates across the life course, but we are also able us to explore how loneliness develops, whether there are different trajectories of loneliness over time and whether those are predicted by membership of a vulnerable group, and transitions associated with onset, continuity, or exit from loneliness. Thus,

we recommend that the prospective surveys that include measures of loneliness continue to do so. Given the limited studies exploring loneliness in midlife, there is a clear need for more research with that population.

The life course approach to loneliness does not just apply to the collection of survey data.
Indeed, we argue above that this approach means that all work on loneliness should explore the universality and unique features of loneliness for people of different ages. Earlier, we noted that work by Pearce et al., (2021) showed only those in early adulthood who reported loneliness were choked by their need to connect with others, such that they underperformed on a social task. That work offers support for the idea that certain drivers of loneliness can become more or less important as we age. Another example, yet untested, but conceptually make sense, are the experiences with stigma and discrimination, which might be particularly important as drivers of loneliness among young people because they are developing their identity and connection, but as we age, we come to feel more comfortable in our skin irrespective of what others think.

Measuring loneliness accurately

Current evidence on measuring loneliness

There are still huge gaps in our understanding about how to measure loneliness, and when taking the life course approach noted above, there are even more issues to be considered, such as whether loneliness questionnaire items are understood in the same way by people at different ages and at different points in the life course and cultures. First, one could question whether the loneliness people experience is appropriately captured by the items we use across all social groups, suggesting a need for qualitative work and in-depth questionnaire development. Second, given the opportunities that are presented by the inclusion of the recommended ONS loneliness measures (adapted 3-item UCLA-LS) in several UK population surveys, there is an immediate need to ensure that the measure, given its different response categories, is age invariant. Without sufficient evidence of measurement age invariance—the degree to which a scale measures the same thing across different age groups of people—it is difficult to ascertain whether differences in loneliness levels are due to true differences in the experience of loneliness, or due to differences in the way age groups understand and respond to the items on the loneliness questionnaires. Questions also remain about the suitability of the recommended ONS loneliness measures to ascertain loneliness across a range of vulnerable subgroups, such as people with distinct disabilities. Recent research (Panayiotou et al., 2021) that explored age invariance of the UCLA-LS and its shorter derivatives noted that only items on the 4-item and 9-item UCLA-LS were interpreted in a consistent way across adults ages 18-99 years;

Panayiotou also provided means for the different age groups so that extreme scorers could be identified easily for research or intervention work. The authors, themselves, note the importance of exploring the 3-item loneliness measure recommended by ONS for age invariance because the items need to be invariant across ages given how those data are used for policymaking. Based on that work, the Australian Ending Loneliness Together team has recommended the 4-item UCLA.

There are other measurement issues that also remain unanswered: (1) intensity and duration, as well as frequency of loneliness needs to be considered – despite this distinction being made in early work (Weiss, 1973), to date, only a few studies have explored both dimensions of loneliness; where those different dimensions have been explored (Qualter, Petersen, K., Barreto, et al., 2021), the distinct aspects of the loneliness experience have been shown to be important, with discrete groups of people being identified, with distinctive predictors; (2) how to identify whether someone is experiencing transient versus prolonged/chronic loneliness and whether this should influence decisions about the intervention offered; and (3) we need normative values for loneliness measures so that those reporting high levels can be identified and any changes (including those arising from intervention) can be monitored appropriately.

In addition, loneliness, because it is a subjective experience, is typically measured by asking people how they feel about their social relationships. For instance, the UCLA Loneliness Scale features items such as “How often do you feel that you lack companionship?” and “How often do you feel isolated from others?”. This presupposes that all respondents have the same degree of psychological mindedness, which is the insight and vocabulary required to articulate their inner states and their causes. However, this assumption may not always hold true. Individuals may differ in their beliefs about what it means to be “lonely” or “isolated”. They may identify their distressing emotions as depression rather than attributing them to their social relationships. Alternatively, they may be too distracted by other worries and distressing feelings to reflect on whether they consider themselves sufficiently socially connected. In other words, some people may be lonely without consciously realising it. This suggests that relying solely on subjective questions about feelings of loneliness may be more accurate for some people than for others. If this can be shown empirically to be the case, this would indicate that measures of loneliness could be enhanced by integrating other, more objective pieces of information from informants such as teachers, parents, colleagues, friends, and partners.

Evidence gaps on measuring loneliness

Explore whether the loneliness items on the recommended ONS Loneliness 3-item scale are understood in the same way by people at different ages

There needs to be examination of measurement invariance across age groups for the adapted 3-item UCLA-LS recommended by the ONS to determine whether people it is given to are interpreting the questionnaire items in the same way. That is particularly important given that comparisons across age groups is an important focus in current work. Further, to help researchers and those wanting to provide support/intervention, norms for the measure must be calculated using population data.

Exploration of duration and intensity of loneliness

The severity of loneliness has been most often quantified as the frequency with which loneliness is experienced. Indeed, the most widely used measure of loneliness (UCLA-LS), asks about how often loneliness is experienced (never – always), creating a score that ultimately measures the persistence of feelings and behaviour that accompany loneliness. Yet, there has been no exploration of which rating parameters, or combination, provides the most valid indicators of loneliness severity, with most scales developed without consideration of how best to conceptualise and assess the severity of loneliness. The current focus on frequency of the loneliness experience is not the only way to explore the severity of loneliness, and it may, instead, be best conceptualised in terms of intensity (with a focus perhaps on 'impairment' in line with measurements of mental health problems) or duration, or a combined assessment.

Clarify the distinction between transient and chronic loneliness

Longitudinal approaches to studying loneliness enable the examination of stability of loneliness experiences identifying short term transitions in loneliness over a year or longer term. Thus, prospective studies allow the examination of transient versus chronic loneliness. But, they assume that the move from transient to chronic loneliness only happened at the year mark, and that may not fit with what people tell us about their loneliness experiences, and what theorists have proposed. Thus, we need: (1) qualitative work that includes interviews/focus groups with people reporting loneliness to understand whether there are distinct aspects of loneliness severity, and (2) a systematic review of the literature to explore how these distinct types of loneliness are conceptualised.

Exploration of informant measures of loneliness

Given work that shows a person's loneliness is perceptible to others who know them well (Luhmann et al., 2016) and can be reliably estimated by friends and partners (Mund et al., 2021) and strangers (Matthews et al., 2021), there is a need to determine whether others can meaningfully comment on others' loneliness. Such work is important in the development of measures of loneliness, and informant measures of loneliness will be particularly useful where an individual is unable to provide such information themselves.

Understanding the relationship between social stigma and loneliness

Current evidence on the relationship between social stigma and loneliness

There is evidence that people with identities that are marginalised in the society where they live report more loneliness than those who are not marginalised (e.g., ethnic minorities, Lasgaard et al., 2016; immigrants, Madsen et al., 2016; people with mental health difficulties, Lauder et al., 2004; sexual minorities, Rönkäa et al., 2018; transgender individuals, Anderssen et al., 2020; homeless people, Morgan et al., 2019). Experiences with prejudice and discrimination are likely to be at least partly responsible for those discrepancies. Indeed, recent research suggests that experiences with prejudice and discrimination are the strongest predictors of loneliness at all ages (Qin et al., 2021). They are also key drivers of loneliness and relationship strain among ethnic minorities (Sutin et al., 2015), racial minorities (Doyle & Barreto, 2021; Priest et al., 2017), people with mental health difficulties (Alasmawi et al., 2020), sexual minorities (Doyle & Molix, 2016), and homeless individuals (Kidd, 2006). Research also shows that stigma extends to family members and other affiliates of individuals with socially stigmatised identities or conditions (e.g., transgender individuals, people with intellectual disabilities, autistic children) and there is some suggestion that can isolate affiliates (including carers) from their social networks (Gray, 2002; Vasilieou et al., 2017). Experiences with discrimination increase loneliness by directly excluding people from social networks, but they also affect loneliness through a more indirect route — by negatively affecting self-image, impairing trust in others, and increasing sensitivity to rejection, which in turn make those who are stigmatised shy away from social interactions (Doyle & Molix, 2014; Smart Richman et al., 2016; Zhang et al., 2020).

Loneliness is also socially stigmatised. Individuals who feel lonely are often perceived to be socially inept, poorly adjusted, and generally incompetent (Borys & Perlman, 1985; Kerr & Stanley, 2020; Lau & Gruen, 1992; Rotenberg & Kmill, 1992). Unhelpfully, research participants have been shown to state an unwillingness to befriend someone who is described as lonely (Rotenberg et al., 1997). People are aware of the existence of a stigma associated with loneliness in their community, particularly young men, who also feel more shame about feeling lonely than older people or women (Barreto et al., 2021b).

Evidence gaps on social stigma and loneliness

There is ample evidence for the link between stigma and loneliness, but knowledge in this area goes little further than that. Research is needed in the following areas:

Clarify the mechanisms linking stigma and loneliness
More research is needed to shed light on precisely how stigma elicits relational difficulties, to enable the development of appropriate sources of support that prevent and address loneliness in stigmatised groups. Qualitative data and the involvement of experts by experience will be particularly important here.

Expand the evidence base to other marginalised groups
Stigmatised groups receive a lot less attention in research than non-stigmatized groups and this is also the case when it comes to loneliness. Stigma dehumanises its targets and, therefore, affects the extent to which their pain is understood and prioritised. Research is needed to improve our understanding of the social needs and experiences of loneliness in stigmatised groups that are less researched, such as people with disabilities, transgender individuals, asexual youth, or older people who are LGBT.

Question and improve our understanding of social skills and social skills-based interventions
Many interventions for people reporting loneliness are aimed at increasing the social skills of targeted individuals. However, social skills-based interventions tend to rely on limited (and often outdated) notions of which and whose social skills need to be trained and how this can best be achieved. This is particularly key when it comes to stigmatised minority groups, whose skills are by definition atypical — which is often mistaken to mean 'poor' — relative to the majority.

Examine the impact of stigma on family members
Experiences with affiliate and courtesy stigma experienced by the family members of those who are stigmatised (e.g., autistic children) are well documented across a range of conditions. Research examining its consequences is, however, scarce and the evidence that exists tends not to focus on the family members as targets of need, but on their role as informal carers. Research needs to focus on understanding the social needs of affiliates of stigmatised individuals to allow for better support to be put in place and reduce loneliness among that group.

Improve our understanding of structural factors
It is recognised that structural factors (e.g., policies such as gay marriage, transgender rights, health, and social care provisions for individuals with disabilities) are important drivers of stigma, and play an important role in increasing or decreasing the link between individual experiences and loneliness, or between loneliness and health. Although structural factors are amenable to change—and, thus, are ideal targets for intervention—evidence regarding specifically what structural factors play this role and how

is still very scarce. Research needs to shed light on what structural aspects play these roles, how, and how these can be addressed.

Ensuring interventions do not increase the stigma associated with loneliness

Interventions to improve health and wellbeing often run the risk of increasing the stigma associated with the condition in question. This is also true for loneliness interventions, since there is virtually no research that identifies what might accentuate or decrease the stigma associated with loneliness. Improving our understanding of loneliness stigma seems essential if we are to ensure that interventions to reduce loneliness do not unwittingly contribute to its stigmatisation.

Culture and loneliness

Current evidence on culture and loneliness

The effects of culture on loneliness have mainly been examined in connection to cultural individualism versus collectivism. Comparisons of responses by participants born or resident in different countries often reveal differences in loneliness, but the direction of those effects is inconsistent, with some finding more loneliness in individualistic societies (Barreto et al., 2021a) and others finding more loneliness in collectivist societies (Lykes & Kemmelmeier, 2014). Work in this area tends to focus on older people, but some work is beginning to examine the role of culture in loneliness experiences among young people (Barreto et al., 2021a; Heu et al., 2021), including adolescents (Verity et al., 2021).

Precisely how individualism versus collectivism affects loneliness is even less clear. One paper showed that individualism did not affect how connected people wanted to be, but reduced how connected people felt they were (Heu et al., 2018). There is also evidence that culture affects the stigma associated with loneliness (Anderson, 1999; Barreto et al., 2021b), which raises questions as to whether the differences in loneliness across cultures already documented reflect actual differences in loneliness, or differences in willingness to admit feeling lonely.

Culture also shapes what causes loneliness. Specifically, having a close confidant (Lykes & Kemmelmeier, 2014), or an intimate partner (Van Tilburg et al., 2002) was shown to be a stronger predictor of loneliness in individualistic than collectivist societies, whereas having friends was a stronger predictor of loneliness in a collectivist society (Italy) than in an individualistic one (Canada; Van Tilburg et al., 2002); living alone predicted loneliness among older people only in a collectivist (Italy) but not in an individualistic (the Netherlands) society (de Jong Gierveld & Van Tilburg, 1999).

In addition, there is some evidence that culture can modify the impact loneliness has on health. One study found that loneliness had a more negative impact on older people's health in collectivist than individualistic societies (Beller & Wagner, 2020), but there is also evidence for the opposite effect in a sample with a wider age and cultural range (Barreto, Hennesey, et al., 2021).

Culture and loneliness evidence gaps

There are several gaps in our understanding about culture and loneliness, and we propose the following as priority areas for future work.

Towards less individualistic understandings of loneliness
Current understandings of loneliness are strongly influenced by individualistic and neo-liberal cultural lenses. This restricts our understanding of loneliness to factors that operate more at the individual level of analysis, to the detriment of understanding more structural factors. In addition, this means that we know a lot less about the loneliness experiences of people who stem from other cultures. Research, therefore, needs to give voice to different cultural lenses (stemming from researchers and or research participants) to learn about both risk and resilience factors that might inform interventions.

Improved understanding of how culture impacts loneliness and its effects
We need to do more research with better methods, such as large representative samples that include a range of cultures and take stigma into account when assessing loneliness. We also need to understand better the role of culture in immigrant groups, who juggle the multiple influences of their minority status, their native culture, and the culture dominant in the country of residence. In addition, we need to improve our understanding of the mechanisms that explain how culture impacts loneliness or interferes with its effects. Knowing this will allow us to understand better how findings obtained in one cultural context might generalise to other cultural contexts, as well as what interventions might work and for whom. We also need more research on whether culture affects the link between culture and health; such work should include a variety of health indicators that might function differently for different social groups.

Expanding what aspects of culture are examined
Research in this area has focused only on very limited facets of culture—primarily differences in individualism and collectivism. Cultures, however, differ in a myriad of ways (e.g., ideologically, religiously, politically, economically, etc.) and can be defined at levels of analysis other than country of residence (e.g., neighbourhoods, regions within countries,

families). Understanding this better will allow us to improve our ability to understand when and how loneliness emerges and can be addressed.

Examining intersections between culture and other demographics
Cultural ideologies often imply different expectations for, and treatment of, people in different social groups, such as the young and the old, or men and women. As such, culture can intersect in important ways with other demographics to make some more vulnerable to loneliness and or its effects than others, as well as to make some more responsive to specific interventions than others.

Mental health and loneliness

Evidence linking loneliness and mental health

Evidence describing the links between loneliness and mental health problems.

There is now cross-sectional evidence to support the association between loneliness and a range of psychiatric disorders, including anxiety, depression, and psychosis, and to support an association between loneliness and suicidal thoughts and behaviour. A recent review found that loneliness was strongly associated with the onset of dementia, and that rates were high among people with paranoia and psychotic symptoms (Solmi et al., 2020). It also found that loneliness was significantly associated with suicide attempts and depressive symptoms, but most studies in that review were noted to be cross-sectional and most were of low quality (Solmi et al., 2020). A systematic scoping review and meta-analysis found medium to large effects of loneliness on all health outcomes, with the largest effects on mental health outcomes and overall wellbeing, although, again, most studies were cross-sectional (Park et al., 2020). This focus on cross-sectional designs is a major issue for understanding the causal link between loneliness and health; we need to use evidence from prospective studies that look at how loneliness and health change and interact over time. In addition, standardised measures of mental health outcomes also need to be used across studies; without that, studies using different subgroups or populations cannot be compared accurately.

People who reported loneliness were found, in a systematic review of longitudinal studies, to be at substantially increased risk of becoming depressed and anxious (Mann et al. 2021). In that review most studies were rated on quality as ‘moderate to good’. Further, it seems that the relationships between loneliness and depression is bidirectional in that

people reporting loneliness are more at risk of being depressed, and that depressed people are more at risk of becoming lonely (Cacioppo et al., 2006). That is also the case for the relationship between loneliness and social anxiety (Lim et al., 2016). Further, recent work suggests that there are over-time relationships between loneliness, depression, and social anxiety, with the rate of change of one impacting the rate of change of the others (Lim et al., 2021). Combined with findings that loneliness and poor social support are predictors of worse outcomes in people with depression (Wang et al., 2018), such findings suggest that interventions focused on loneliness would be expected to also impact depression and social anxiety.

Evidence from a systematic review and meta-analysis shows loneliness is a significant predictor of both suicidal ideation and behaviour, with depression potentially the link between loneliness and suicidal ideation/behaviour (McLelland et al., 2020). Middle-aged adults were under-represented in the literature identified, as were those from minority ethnic backgrounds; studies were more likely to report a significant relationship if the sample comprised predominantly female participants or participants were aged 16–20 or >55 years at baseline.

The impact of loneliness on the mental health of previously healthy children and adolescents was investigated in a rapid systematic review (Loades et al., 2020). Although that review will require updating as evidence relating to COVID-19 accumulates, the review found studies suggesting that social isolation and loneliness increased the risk of depression, and possibly anxiety at the time at which loneliness was measured and between 0.25 and 9 years later. Thus, findings suggest both short term and longer term impacts of loneliness on depression.

Evidence describing the effectiveness and acceptability of interventions to address loneliness and mental health problems.
For people in the general population a systematic review suggests that, based on randomised controlled trial evidence, the interventions most successful in reducing loneliness were those that addressed maladaptive social cognitions (Masi et al 2011); the same was found for children and adolescent youth, where psychological interventions, along with social and emotional skills training, were successful at reducing loneliness (Eccles & Qualter, 2021).

For people with mental health problems, although there have been some positive trials of psychological and social interventions, no type of support has consistently proved effective in reducing loneliness or social isolation in this group. Two recent systematic reviews (Barnett in prep; Ma et al., 2019) conclude that evidence from existing trials is not strong enough to make specific recommendations for practice. This contradicts earlier assertions that interventions addressing maladaptive social cognitions hold promise for those with pre-existing mental health problems (Mann et al., 2017). Trials have shown mixed results and no clear pattern in intervention strategies producing benefits. No approaches among people with mental health

problems can yet be said to have really clear-cut supporting evidence (Ma et al. 2019).

Available evidence about the determinants of loneliness in people with mental health problems suggest a range of approaches may be required, tailored to fit people's individual experiences of loneliness and contexts. For some, loneliness is strongly linked to social isolation and lack of supportive social contact; for others; psychological factors including perceived social threat and sense of belongingness are important drivers of loneliness. Different intervention options to meet these needs are desirable.

Interventions in people with mental health problems have been marginally more successful in reducing objective social isolation than subjective loneliness, particularly in the medium term, through a range of approaches including supported socialisation (e.g. befriending or peer support, social skills training, and social cognitions approaches (Ma et al., 2020).

There is some preliminary evidence on interventions that may be acceptable and potentially helpful among people with mental health problems, both in psychological interventions aimed at changing the way people think about other people and about their relationships, and interventions focused more on practical support in extending social interactions (Ma et al., 2020). However, in most cases what we have are preliminary studies that show approaches are feasible and acceptable, but do not provide definitive evidence.

Evidence gaps on mental health and loneliness

Exploration of vulnerable groups
Vulnerable groups about whom we lack evidence for links between loneliness and mental health problems, whether in the general population or in groups with pre-existing mental illness, and the mechanisms for those associations. We strongly recommend prioritising those with pre-existing mental health problems because they have a markedly increased risk of loneliness and social isolation, and the pathways out of loneliness may be much more difficult for them. Understanding the relationship between loneliness and mental health in this group has the potential to greatly improve quality of life and clinical outcomes. These investigations should be epidemiology, although to understand pathways, experiences, and intersectional factors, both quantitative and qualitative approaches are recommended.

Examination of whether there is a bidirectional relationship between loneliness and mental health diagnoses
Because depression is very common, and more work is needed to understand mechanisms and interventions, we need more studies

investigating whether there is a bidirectional relationship between depression and loneliness over time. Longitudinal studies measuring the association between loneliness and mental health diagnoses other than depression are also important: Obsessive Compulsive Disorder and other specific anxiety disorders, personality disorder, psychotic illness, eating disorders, substance use disorders or hazardous/harmful alcohol use. Such work should also include an investigation of whether there is evidence for bidirectional relationships, and use multi-level modelling to consider the interaction between risk factors for loneliness at an individual, familial, community and societal level.

In-depth qualitative work needed to explore mechanisms linking loneliness and mental health.

There is also a need for in-depth qualitative studies that explore the mechanisms of these associations by understanding experiences of loneliness, and how these interact with experiences of mental illness and with the social adversities experienced by people living with long term mental health conditions, including stigma and self-stigma.

Expand examination of the relationship between loneliness and mental health to other groups of concern, including children in care and asylum seekers.

In the general population, groups of concern (due to the potential for chronic loneliness to precipitate mental health problems) about whom we lack evidence for associations between loneliness and mental health problems are children in care, emerging adults, particularly those not in education, employment, or training, middle-aged adults, care leavers, people who identify as LGBT, specific ethnic minority groups, refugees and asylum seekers, parents (including perinatal loneliness), retired individuals, people with disabilities and their carers (particularly young carers).

Thorough examination of the effectiveness and acceptability of interventions to address loneliness and mental health problems.

We lack adequately powered trials of a broad range of psychological and social interventions to address loneliness and mental health problems in clearly defined groups (taking account of the context for their loneliness). Such groups include people who have a range of mental health conditions and people in the general population who are at high risk of mental health problems e.g. because of chronic loneliness. Given what we know about the burden of loneliness in psychiatric illness, we should be prioritising intervention studies in people with mental illness.

Such evaluations should also measure acceptability to target groups. We also need studies investigating the effectiveness and acceptability of community and societal level interventions, and interventions delivered to families. Such work should include evaluations of what works in combinations of intervention types, to identify effective multimodal strategies.

Further, studies should investigate the effectiveness and acceptability of (1) digital interventions to address loneliness in the general population and in groups with pre-existing mental illness, and (2) loneliness-focused interventions that address suicidality in the general population and in groups with pre-existing mental illness. As we state elsewhere, research on acceptability should include consideration of how to target interventions at those in greatest need whilst not stigmatising them further.

4.6. The importance of place and context for understanding loneliness

4.6.1 Current evidence for the importance of place and context for understanding loneliness?

It is becoming increasingly clear that loneliness needs to be considered within a wider environmental context. The role of place-based factors has been highlighted by recent figures of the Office of National Statistics, who found that after a year of lockdowns, social distancing, and restrictions on travel and gatherings, loneliness was more common in deprived areas and among young people (ONS, 2020). That supports earlier work by Victor and Pikhartova (2020) where loneliness and deprivation appear to go together, with those in deprived areas reporting higher loneliness than those in non-deprived areas. Living in remote areas is associated with poor transport, reduced local activity choices, social isolation of minorities, poor digital connectivity, and lack of opportunities to socialise outside of school, which increases loneliness (Alwood, 2020). However, young people also report feeling particularly lonely in densely populated urban areas, including at university, that are rich in social opportunities (ONS, 2018). Existing research shows that living in greener-, more walkable-, and less populated-areas is associated with lower loneliness (Domènech-Abella et al, 2020, Foster et al., 2015; Maas et al., 2009; Scharf et al., 2008). Individuals with a higher sense of belonging to their neighbourhoods and higher trust in the inhabitants of their neighbourhoods feel less lonely and higher neighbourhood social cohesion has been associated with better mental- and physical health (Kearns et al., 2015; Kress et al. 2020). Together, these findings highlight the vital role of place-based factors (e.g., built environment, green spaces, land use patterns, urban design, or street network connectivity) and place-related socio-spatial factors (e.g., wealth of an area, social cohesion, neighbourhood perception, and ethnic homogeneity). While some important insights on the role of these factors have been gained, we know little about the mechanisms by which these factors become conducive to loneliness and related issues of poor mental and physical health (Cacioppo & Cacioppo, 2018).

Evidence gap in what we know about place and context for understanding loneliness.

To be able to design effective community and/or population-level interventions that can reduce loneliness and related mental and physical health problems, we need to understand the mechanisms that underlie the relationships. Our understanding of the role of various aspects of place can be improved through systematic, multi-method investigation with more fine-grained measures of what constitutes such place-based factors (e.g., Hillier & Vaughan, 2007). For example, transport links or street-network connectivity may be important, particularly for people with disability or low incomes, who cannot otherwise drive.

Key factors we lack evidence about in relation to loneliness are as follows:

1. **Environmental factors**, including, but not limited to, air pollution, light pollution, available green and blue space.

2. **Connectivity**, including, but not limited to, transit access, transport connectivity, mobile networks.

3. **Built environment**, including, but not limited to, homes, buildings, zoning, streets, sidewalks.

4. **Public structures**, including, but not limited to, community assets, such as libraries, recreational facilities, playgrounds, youth centres, cafés.

S5. **Neighbourhood factors**, including, but not limited to, social cohesion, social deprivation, neighbourhood perception, ethnic (minority) density, sexual minority population density, gender identity population density (based on census population denominators), area affluence and crime.

To gain a better mechanistic understanding of the role of place-based factors in loneliness, each of the above needs investigation in relation to (a) risk factors for loneliness, (b) the contribution to the transition from transient to chronic loneliness, (c) as part of a lifestyle approach, the impact in

different life-stages (e.g., growing up exposed to place-based risk factors vs. being exposed in middle and/or old age) to identify sensitive periods for exposure to place-based risk factors, and (d) how they might be modified to reduce loneliness. Furthermore, each of the above should be investigated with respect to individual differences, e.g., sex, ethnicity, socio-economic status, personality, and other subgroups, to understand what places encourage connection may be different for distinct subgroups. As we stated elsewhere in this report, what places encourage connection is also identity-related, and will be different for distinct subgroups of people. Further, the interaction of place-based factors with the effectiveness and acceptability of interventions for loneliness (e.g., social prescribing) also need to be investigated.

4.7. Loneliness in the workplace

What we know about loneliness and the workplace
There is increasing interest in understanding loneliness in the workplace. For most people, time at work fills a significant proportion of their lives overall and the average person spends more time at work than on any other daily activity. Research by academics, charities, policy makers, and others is contributing to developing an evidence base on loneliness in the workplace, drawing largely on qualitative and consensus methods, development of conceptual models and scales, associations from cross-sectional analyses, quasi-experimental studies, and economic modelling.

Data from the Community Life Survey (2019-2020) showed that employment was associated with reduced loneliness risk: those who are employed are less likely to report feeling lonely often/always (5%) compared to those who are unemployed (15%) or economically inactive (8%). This may be explained by what work provides individuals: a source of income, a life routine structuring the use of time, a source of personal status and identity, a context for social interaction, and a meaningful experience that can provide a sense of accomplishment (Friedman & Havighurst, 1954).

The risk of loneliness in the workplace has been attributed to a combination of factors to do with the individual (e.g. personality related factors) and the workplace (nature of the job and characteristics of the organisation; Wright, Burt & Strongman, 2006). Three ways in which loneliness can develop in the workplace have been proposed: (i) existing feelings of loneliness unrelated to work may be carried into the workplace, (ii) features of work may trigger or exacerbate loneliness, and (iii) the impact of work (e.g. stress, long hours) can spill over into non-work life, isolating people from others and increasing loneliness risk (Holt-Lunstad, 2018a), although those risk factors have not been tested empirically, and we recommend such work is conducted using qualitative methods in the first instance.

There is evidence for the importance of considering loneliness and relationships as part of wider wellbeing in the workplace. Research by The What Works Centre for Wellbeing (2018) highlighted the fact that relationships and health are the two main determinants of wellbeing in the workplace, followed by security and environment, and then purpose. Having good quality, meaningful connections is associated with better outcomes in terms of quality of work, higher wellbeing, and greater engagement in work. Across work roles, a lack of social connection and loneliness can lead to less commitment and productivity and greater absenteeism and staff turnover, and employees who report higher loneliness appear less approachable to their colleagues (Bycio, Hackett, & Allen, 1995; Ozcelik & Barsade, 2018).

Several features of current working patterns may deter the ability to form meaningful relationships. People change jobs more often than ever before and more people work part-time (Eurostat, 2018). Virtual teams and remote working, either all or some of the time, mean fewer face-to-face interactions and greater reliance on technology. A sense of community and belonging in the workplace can be particularly important for people who have moved away from their usual social network for work. Having a temporary contract rather than a permanent one is associated with greater loneliness, and the association between working temporarily and job satisfaction is mediated by loneliness at work (Moens et al., 2021). Exploration of how these working patterns impact loneliness is crucial to understanding loneliness in the workplace, and we recommend both quantitative data collection and qualitative interviews as methodological designs.

What we need to know about loneliness in the workplace

Exploration of the mechanisms that underlie the relationship between loneliness and place.
To understand the individual and organisational determinants of loneliness in the workplace, and to develop workplace interventions where appropriate, we need routinely collected data on loneliness (e.g. as part of people surveys on health and wellbeing) that includes people of working age and those who have different working patterns. We also need qualitative examination of how loneliness can develop in the workplace.

A series of consultation events with cross sector employers committed to addressing loneliness in the workplace identified five themes where employers considered loneliness in the workplace can be addressed (DCMS, 2021). But, while aspects of these five themes are supported by existing evidence, longitudinal data need to be collected and explored to

establish clear patterns, and interventions based on these themes require development and testing.

The theme of culture and infrastructure describes how loneliness awareness as part of wider employee wellbeing should be embedded at an organisational level within policies. Working at an organisational level may help to both prevent and alleviate loneliness as well as challenge the stigma of loneliness (Holt-Lunstad, 2018b). Organisational culture and corporate values have a role to play; those that emphasise individualism and personal success through competition and independence may exacerbate the incidence of loneliness (Slater, 1976).

Managers are often an employee's most direct point of contact and one of the most important relationships at work. The theme of management describes the kinds of support and guidance managers might need to identify and help people working for them who are experiencing loneliness.

The theme of people and networks describes how specific workplace transitions, roles and responsibilities can increase the risk of loneliness. These include the start of new employment, having management and leadership responsibilities and at the end of working life (for both planned and unplanned retirement). Alongside this, life events experienced during working life may be triggers for loneliness, including such events as caring responsibilities or chronic health problems, being a new parent, experiencing bereavement, and the retirement transition. Feeling marginalised in an organisation can lead to feeling excluded and disconnected and reduce the quantity and quality of relationships (Wright & Silard, 2020).

Retirement can be a trigger for loneliness. The potential loss of role, purpose, structure and social connections at the end of working life can contribute to becoming lonely. Retirement planning that is broader than financial planning can help to mitigate against this risk. Time to identify how skills developed during working life might be used in retirement as well as promoting the benefits of volunteering, both to the individual and society, can help ease the transition (Calouste Gulbenkian Foundation UK Branch & Centre for Ageing Better, 2017). Further research is needed in this area

People differ in their preferences for the quantity and quality of social contact and relationships in the workplace. Having shared activities that people can choose to join can improve the social atmosphere in the workplace and improve wellbeing and performance too. Examples include workshops, internal mentoring programmes, action planning groups based around specific issues, and social events (What Works Centre for Wellbeing, 2017).

The theme of work and workplace design describes the importance of space, time, and opportunities for connection. The impact of remote working on loneliness is also a topic that requires further exploration. The increasing

shift to greater flexibility in where and when we work has been amplified by the COVID-19 pandemic and led to a likely longer-term shift to homeworking at least some of the time for more people. Whilst this provides welcome flexibility and work-life balance for many, the reliance on virtual connection, reduced opportunities for networking and shared activities can impact meaningful social connections.

The theme of action in the wider community describes how employers can support outreach work within working hours to provide both direct loneliness support within organised schemes as well as promote volunteering in the longer term.

Improving our understanding the economic case for tackling loneliness

What we know about the economic case for tackling loneliness
Loneliness among adolescents and young adults is associated with poorer education outcomes, and lowers their job prospects and mental health. Among adults, loneliness impacts work productivity and mental and physical health. For these reasons, it is important to identify the costs of loneliness for society. Estimated costs of loneliness in the workplace due to loss of productivity and lost days at work due to the health impact of loneliness have been explored (DCMS, 2020), estimating that an employee experiencing loneliness is 1.3% less productive than those who do not report loneliness. This is equivalent to £730 of gross value added per year on average for all sectors. Therefore, the average cost is approximately £330 per year per lonely person. The proportion of days' work lost due to depression, heart disease and stroke attributable to severe loneliness was estimated as equivalent to £21 per person per year and the average cost per lonely person is £9 per year. Both these estimates assume 45% of those who are often lonely are in the workforce (based on wave 9 of Understanding Society) and are based on 2019 prices. Other estimates place the cost of loneliness to UK employers as £2.5 billion every year. These costs are primarily due to increased staff turnover (64%, £1.62 billion), lower wellbeing and productivity (26%, £665 million), the impact of caring responsibilities (9%, £220 million), and ill health and associated sickness absence (1%, £20 million; Co-op and New Economics Foundation, 2017). Economic analysis that considers the impact on educational outcomes and employment prospects of youth loneliness appears to be absent from the literature.

While better understanding of the costs of loneliness is important, it is vital to determine the return on investment from actions against loneliness. To do that, policymakers and service commissioners need information on relative programme costs, direct impacts of loneliness, and other consequential

impacts, such as changes in the use of health and social care services compared to other alternative uses of resources. This means that economic analysis needs to be embedded into robust prospective trials looking at the effectiveness of interventions.

To date, there has been only very limited economic analysis, both in the UK and internationally, that has been conducted alongside robust evaluations of actions to tackle loneliness (Mihalopoulos, et al. 2020; McDaid et al., 2017). This is a significant gap in what is known. Even where the effectiveness of evaluations have been conducted, it has been unusual for studies to report the costs of service development and delivery, something that is fundamental for any subsequent retrospective economic evaluation.

Loneliness and outcome measurement in economic evaluation.
The shape of future economic evaluation research also needs careful consideration. Although interventions to address loneliness may be implemented and funded by many different sectors, many are likely to be funded through the health and social care sector. The primary outcome measures used in economic evaluations that inform the development of health, social care and public health guidance by NICE (National Institute of Health and Care Excellence) remains the Quality Adjusted Life Year (QALY), as measured using the EuroQoL EQ-5D instrument, and more recently the Wellbeing Adjusted Life Year (WELBY). The advantage of this metric is that the merits of different interventions, regardless of their health focus, can be compared by looking at their respective cost per QALY/WELBY gained. If we want to explore the economic case for tackling loneliness to better inform decision making processes, it is important to directly measure quality of life in evaluations, and not just loneliness.

However, there are challenges. The EQ-5D and other quality of life instruments used by health economists have been criticised for not sufficiently accounting for psychological and social impacts of life, including loneliness and social isolation (Chen & Olsen, 2020). It may be possible to 'bolt on' additional domains to existing measures to better capture impacts on loneliness in assessment of quality of life, but more research is needed on this.

Health economic researchers may also wish to assess how well different loneliness measurement scales/scores, e.g. using the UCLA-Loneliness Scale or the De Jong Gierveld Loneliness Scales, could be mapped onto comparable utility values associated with different health states used to estimate QALYs. (For instance, there are values for each of 243 potential health states in the five-health domain, three-level version of the EQ-5D-3L). This would also then allow QALY values to be generated on loneliness alleviation measures to inform decision making processes, so that they can be compared with other health system funded interventions. In the same way, the relationship between loneliness and measures of wellbeing that are increasingly used in evaluation might also be assessed.

Strengthening the economic evidence base

In conducting future economic evaluations, it is also important to identify and capture all key relevant economic aspects of loneliness that have an impact on people's lives. This includes changes in health service use, but also other potentially substantive impacts such as changes in the use of social care and admissions to residential care for older people. Across the life course, other examples of potential impacts that may merit exploration include changes in work and higher/further education participation, receipt of informal care, and willingness to volunteer.

Much of the existing evaluation literature has focused on small scale, short term, evaluation of interventions, but longer-term economic evaluation is needed. Changes in loneliness and associated impacts, such as a strengthening of social ties, may take time to change health, wellbeing, and other trajectories. This, in turn, may mean that any benefits of reduced loneliness may take years to have a meaningful impact on the use of public services and supports.

Different approaches can be used to address these gaps in understanding. Collecting data over longer time periods as part of evaluation is one option, as may be pooling evidence on costs and effects from multiple small-scale studies, but there are also opportunities to link evaluations to routinely collected datasets, for instance on health service utilisation in order to explore whether there are long term economic gains for the health service. Dataset linkage might also be used to mitigate some of the limitations of small-scale evaluations where it is not easy to include comparator populations, for instance by using techniques such as propensity score matching to create a comparator population. A matched population might also be drawn from longitudinal cohort studies, especially where loneliness is measured. Future research might also explore where geographical variations in access to loneliness alleviation measures might also be used to create comparator populations.

Modelling studies are often used by economists to extrapolate potential very long term costs and benefits beyond those that can be measured in prospective empirical evaluations. To date there are only limited examples of modelling studies that have looked at the longer-term potential impacts of loneliness alleviation. This is another area where the evidence base can be strengthened. An advantage of such modelling analyses is that they can explore how the strength of the economic case can vary when changing model assumptions such as the cost and effectiveness of interventions, rates of initial uptake and sustained engagement, and the value of targeting (McDaid & Park, 2021). This can inform decision making, for instance helping policy makers know how likely an intervention is to be cost effective, how long it will take to be cost effective, and which sectors will benefit. Models can also be used to examine the costs and benefits of scaling up the implementation of effective interventions.

Evidence gaps in the economic case for tackling loneliness

Development of quality of life instruments to assess the impact of loneliness on the lives of individuals

There is a need to explore whether it is possible to 'bolt on' additional domains to existing quality of life measures to better capture impacts on loneliness in assessment of quality of life. Additionally, health economic researchers should explore how well different loneliness measurement scales map onto comparable utility values associated with different health states used to estimate QALYs.

Identify and capture all key relevant economic aspects of loneliness that have an impact on people's lives.

It is crucial to map out the key areas affected by loneliness and look to determine whether there is a way to gather meaningful data for an economic analysis.

Improving the lives of people who report loneliness via interventions

What we know about the effectiveness of interventions for loneliness

The number of studies evaluating the effectiveness of interventions designed to reduce loneliness has increased significantly in recent years. Interventions are characterised by a high degree of heterogeneity, with diverse participant groups and intervention types. Most studies focus on interventions for older people, and the majority are conducted in Western countries. Most impact studies focus on interventions for groups or individuals, but there are also examples of school-based interventions and larger community-based interventions with a broad target group. At the same time, there is great diversity in the use of intervention strategies, with "social support" and "social networking" being the most widespread. Most interventions use a group-based format and are non-digital, although the proportion using a digital format is increasing.

There have been many attempts to synthesise the intervention literature on loneliness, and we highlight the most recent review here because it brings all academic and grey literature together, and includes the most recent evaluations (Christensen et al., 2021). That meta-analysis showed that interventions whose primary aim was to reduce loneliness were effective. The meta-analysis included 54 randomised control trials (RCTs) with a total of 3,962 participants, 22 multi-cohort studies with a total of 1,458

participants, and 48 single-cohort studies with a total of 3,009 participants. Despite a large variation between studies, the overall effect of the loneliness interventions was robust, with a significant reduction in loneliness seen across age groups, intervention strategies, and intervention format. The authors concluded that interventions benefited people who reported loneliness.

The authors noted that, in just over one in three interventions, multiple primary intervention strategies were used and there were interesting examples of community-based programmes that included several different interventions. Because loneliness can be seen as a multifactorial problem and there are effects from the different intervention strategies, the authors recommend combining intervention strategies and, where possible, targeting intervention strategies to specific groups/communities.

Evidence gaps in what we know about the effectiveness of interventions for loneliness

Encourage robust and high-quality evaluations of loneliness interventions in the UK.
In the meta-analysis reviewed above, in general, the studies were not of good quality in terms of methodology and analytic procedure, suggesting an important area of improvement. There is a need for systematic and robust evaluation of interventions designed for those reporting loneliness.

Look beyond immediate impact.
Only the immediate impact of loneliness interventions is often measured when examining the effects of an intervention. There is a need for additional analysis of the duration of the effects. This maps onto the evidence gaps noted elsewhere in this report.

Explore the effectiveness of interventions designed for different subgroups.
Most of the studies in the meta-analysis focused on interventions for older people, and there is a need for systematic development and evaluation of interventions designed for other age groups who report loneliness. There is also a need to explore whether certain types of intervention work better for certain subgroups. In our section on mental health and loneliness, we also noted the importance of exploring interventions focused on loneliness for those with existing mental health conditions.

How can we improve the evidence base by filling the evidence gaps?

Is new research really needed?

In addition to the identification of evidence gaps, we explored whether a new study was justified to address the evidence gaps we identified, or whether the questions could be answered using available data. In Table 1, we have noted each evidence gap we identified in Section 4 of this report, and the data needed for addressing each of those gaps. We have explored currently available data to determine whether there is already data that will help to fill those evidence gaps.

Of course, there is the question of whether the work we recommend is relevant to its end users (i.e., those who report loneliness), and the areas we noted as evidence gaps will be prioritised in consultation with colleagues at DCMS and others who form part of the Tackling Loneliness Evidence Group. In addition to our recommendations noted in Table 1, we also recommend there should be a place online where there are links to all the information the DCMS Evidence Group has gathered; we recommend gov.uk to ensure wide accessibility

Authors

Team Lead: Pamela Qualter (Manchester Institute of Education, University of Manchester)

Team:

- Louise Arseneault (King's College London)
- Manuela Barreto (University of Exeter)
- Anne-Kathrin Fett (City, University of London)
- Nancy Hey (What Works Wellbeing)
- Sonia Johnson (University College London)
- Kalpa Kharicha (Campaign to End Loneliness)
- Timothy Matthews (King's College London)

- David McDaid (London School of Economics)
- Ellie Pearce (University College London)
- Alexandra Pitman (University College London)
- Christina Victor (Brunel University London)

This report provides non-specialists with an informed expert overview of the evidence gaps that still need to be filled in the field of loneliness. Loneliness is a devolved policy area. Although the report focuses on UK wide evidence gaps, DCMS's work to tackle loneliness focuses on England only. This report was written by the academics listed in the review, and the views expressed in this report are not official government policy.

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