The Attitudes to Ageing Questionnaire for Young Adults (AAQ-Y):

Development and Psychometric Properties

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Thesis portfolio abstract

Population ageing is one of the defining problems of this century. Developments in life-saving and life-lengthening treatments for physical health have made issues of ageing and well-being in later life a global priority. Ageing is complex, individual and multifaceted, experienced differently at different life stages. Loneliness, previously considered a well-being indicator of old age, is becoming an issue of public and political interest. Loneliness has implications for physical and mental health, incurring a cost to the individual and society. In the context of an ageing population, attitudes to ageing are highly relevant. Negative attitudes have been associated with poorer social, psychological and physical health outcomes in later life. The attitudes of young adults to ageing from a multidimensional perspective are less well understood.

This thesis portfolio speaks to issues of ageing, with a focus on the attitudes and experiences of young adults. It is comprised of a systematic review of the prevalence of loneliness in young and older adults, and the factors associated with loneliness. An empirical paper concerned with developing a valid and reliable questionnaire to access young adults' attitudes to ageing, the Attitudes to Ageing Questionnaire for Young Adults (AAQ-Y) is presented.

Findings from the systematic review suggest loneliness is prevalent amongst young adults and further research into the risk factors and role of age-related transitions is needed. The empirical paper found a questionnaire based on items developed from a tool used with older adults (the Attitudes to Ageing Questionnaire) does not translate well when used with younger populations. Findings are discussed in relation to current literature and suggestions made for future research adopting a stage of ageing perspective, to promote acceptance, inclusion and well-being across the lifespan.

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Chapter One: A systematic review of the prevalence of loneliness in young and older adults

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Is loneliness a problem of old age or an affliction of youth? A systematic review of the prevalence of loneliness in young and older adults

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Abstract

The prevalence of loneliness among young adults and older adults is unclear. The evidence base for the risks of loneliness to physical and mental health is extensive. Research into the risk factors associated with loneliness and the availability and efficacy of interventions have largely focused on older adults. This systematic review examined the prevalence rates of loneliness in young adults and older adults to find out which group experiences greater levels of loneliness. Factors associated with loneliness within and between age categories was also assessed. A comprehensive search of four electronic databases (PsycARTICLES, PsycINFO, MEDLINE Complete, SCOPUS) was conducted. Inclusion criteria involved observational studies that detailed the prevalence of loneliness, via a validated questionnaire or single item question, in both young (18 years – 30 years) and older adults (65+ years). Eleven studies were included in the final review. Of the 11 studies included, seven reported higher rates of loneliness in young adults and four in older adults. The data from eight studies were combined to calculate a pooled prevalence based on a total sample size of 63,072. Results found a 21.1 per cent prevalence in young adults and 17.4 per cent in older adults. Factors associated with loneliness across both age groups included partner status, living arrangements, subjective and objective health, satisfaction with social relationship factors, mental health and employment. Fluctuations in factors associated with loneliness at different ages might suggest the experience of loneliness is quite different at these life stages. Adopting an age-normative approach to loneliness would be helpful to understand the factors associated with loneliness and to inform spending on health, education and housing policies to tackle the problem of loneliness and its physical and mental health correlates.

Keywords: Loneliness, prevalence, young adults, older adults

Introduction

The concept of loneliness has a broad and rich history. Dating back to sacred texts, descriptions of loneliness have depicted a conflicting experience of separation, isolation and aversion but also a space for wisdom and personal growth. Aristotle wrote that 'a man who is wholly solitary will develop either into the God or the brute' (384-322 B.C./ 1985 as cited in Rosedale, 2007) with loneliness existing on a continuum from a positive to a negative state. Definitions and experiences of loneliness have continued to evolve over time, influenced by changes in social structure, family units, housing, transport, health and economic factors. Earlier psychological research equated social isolation with loneliness, qualifying a person as lonely if they had a limited social network and lived a solitary lifestyle. The description was later criticised for failing to account for an emotional component of loneliness and the conflicting concept of solitude, a highly valued and sought-out experience offering the opportunity for emotional renewal, self-reflection and relaxation (Larson, Csikszentmihalyi, & Graef, 1982). Although correlated , loneliness and social isolation are now understood to be distinct constructs (Schrempft, Jackowska, Hamer, & Steptoe, 2019) Loneliness more accurately reflects an individuals evaluation of their own social relationships rather than an objective measure of social contact (Masi, Chen, Hawkley, & Cacioppo, 2011). This recognition of an affective component to loneliness, whether it be positive or negative, led to current commonly used definitions of loneliness as the perceived discrepancy between desired and actual social relationships (Peplau & Perlman, 1982).

Loneliness and age

Loneliness has typically been stereotyped as a problem of old age, even considered a normal part of ageing in some societies. There is a large body of research

addressing loneliness in old age. Reviews of cross-sectional studies have documented the high prevalence of loneliness in older adults, particularly those of advanced age (Aartsen & Jylhä, 2011; Fokkema, De Jong Gierveld, & Dykstra, 2012; Sundström, Fransson, Malmberg, & Davey, 2009, Victor & Yang, 2012). Multivariate analyses suggest factors such as the loss of a partner or friends due to death and the consequential reduction in social connectedness leads to loneliness in later life (Nicolaisen & Thorsen, 2014). There are fewer papers addressing loneliness in young adults, studies exploring loneliness across the lifespan report interesting and conflicting findings. In 1990 Daniel Perlman conducted a meta-analysis of age differences in loneliness and found loneliness to be highest amongst young adults, declining over midlife, and increasing modestly in old age. The author notes however that caution be taken when interpreting the findings due to methodological issues of differential volunteering rates and measurement inequivalence across age groups. Rokach (2000) reported young adults in their 20s as "experiencing the pain and distress of loneliness to a significantly greater extent than other age groups" with the elderly experiencing lower levels of loneliness. Rokach hypothesised that due to their maturity and life experiences, the elderly are more able to appreciate the growth and personal development which may result from loneliness. In a UK based study of 2393 15 to 97 year-olds Victor and Yang found the highest levels of loneliness in those under 25 years and those over 65 years (Victor & Yang, 2012). More recently, a large-scale population-based survey conducted by the BBC in collaboration with The Welcome Trust reports loneliness as most prevalent within youth and gradually decreasing into old age. In 2018 55,000 people worldwide between the ages of 16 to 99 years took part in the BBC's 'Loneliness Experiment'. Results found 40 per cent of 16 to 24-year-olds reported that they 'often' or 'very often' feel lonely, compared with 27

per cent of over 75-year-olds. The survey also reported higher levels of loneliness in young people across different cultures, countries, and genders.

Victor and Yang (2012) propose two different models to describe the relationship between loneliness and age depicted in the research. A linear model where loneliness increases progressively with age, reflecting the more stereotypical view of loneliness. This trajectory assumes that developmental events linked to loneliness, such as retirement, loss of loved ones and problems of ill-health are age-typical and increase experiences of loneliness in later life (Luhmann & Hawkley, 2016). The second model reflects a non-linear U-shaped distribution with higher rates of loneliness amongst younger people and the elderly, dipping across middle-age. The relationship between age and loneliness appears inconclusive but the notion of loneliness as reserved for old age may well be an outdated one. Victor and Yang's linear model of loneliness identifies significant life events and developmental milestones as likely contributors to the onset and prevalence of loneliness in later life. Young adulthood is also characterised by several significant and often challenging transitions, raising the question as to whether difficulties achieving or adjusting to age-related changes in early life can, in some part, explain the prevalence of loneliness in young adults. Nicolaisen and Thorsen (2014) propose questions around whether the older or younger are lonelier, and what factors are associated with loneliness across these age categories, are important to address and suggest using population-based research as a means to do so.

Other factors associated with loneliness

Loneliness has been shown to be related to many factors in the literature, the most commonly reported are physical and mental health, living arrangements, marital/relationship status and social contact. The nature and direction of these

relationships appears unclear with research suggesting these factors may differ in different age populations. The relationship between internet use, including social media, and psychosocial outcomes such as depression and loneliness has attracted increasing attention in research. Finding's appear inconclusive and the 'internet paradox' continues (Kraut et al. 1998). Lonely people have been reported to rely on social media to compensate for a lack of human connection and social skills in face-to-face settings (Jihyun, Kim, Jinyoung, Kim, Hocheol, 2019). The social compensation model proposes internet sites such as facebook can be used to compensate for individuals who are socially disadvantaged offline (Song et al., 2014). Huang's (2010) meta-analysis of the relationship between psychological well-being, including depression and loneliness, and various internet sites found a small but detrimental effect of internet use on psychological well-being, including loneliness. Furthermore, research into the impact of social media on children, adolescents and families found high use of the internet was linked to loneliness, social anxiety and depression (O'Keeffe, Clarke-Pearson, & Council on Communications and Media, 2011). Conversely, research into older adults and internet use has suggested positive implications for psychological well-being. Heo et al. (2015) found higher levels of internet use significantly predicted higher levels of social support, reduced loneliness, and better life satisfaction and psychological well-being among a sample of 5,203 older adults (aged 65 years and older). For older adults social media may offer a way of staying in touch with loved ones who live far away, allowing those small but emotionally meaningful social connections to be maintained. The relationship between the use of the internet and social media and loneliness may be quite different in different age groups, a protective factor for some, a risk factor for others.

An understanding of the prevalence of loneliness and its correlates within different age categories has implications for prevention and intervention planning, to

manage the increasing health and social care costs associated with loneliness. With an increasing ageing population, cultural shifts in the longevity and quality of relationships and trends towards more people living alone, loneliness could rapidly become the next major public-health concern (Leigh-Hunt et al., 2017). If loneliness is no longer just a stereotype of old age but a reality of young adulthood it will be important to develop mental and physical health strategies to prevent and minimise the individual and societal costs. The evidence base for current interventions aimed at reducing loneliness is limited and predominantly focuses on older adults who are socially isolated, often due to bereavement, ill health or disability (Leigh-Hunt et al., 2017). Understanding the prevalence of loneliness in young and older adults and its associated factors has important implications for the development of more up-to-date and age-sensitive prevention and intervention strategies.

Objectives of the Current Review

This review focuses on the prevalence of the experience of loneliness in young adults and older adults. It seeks to answer the question as to which age group experiences greater levels of loneliness and what factors are associated with increased loneliness in these groups. An understanding of prevalence rates and associated factors for these sub-populations has important implications for resource allocation and the commissioning of health and education strategies.

Method

Prior to commencing the review, the existing literature was searched to determine whether the questions posed here have already been answered. As far as the authors are aware the last review of age differences in loneliness was Perlman's (1990) meta-analysis, however since then a larger body of research has been produced. The current

review will offer an update, employing more methodological rigour, of the trends in loneliness between younger and older adult populations since Perlman's 1990 findings. The protocol for this review was pre-registered on PROSPERO (CRD42018096202).

Eligibility Criteria

Studies were included if they reported on the prevalence of loneliness in community dwelling adults using a standardised questionnaire or single item question assessing loneliness. Studies assessing related concepts like social isolation without including a distinct measure of loneliness were excluded. To be included studies had to consist of identifiable sub-populations of both young adults, 18 to 30 years, a commonly used quantification of young adulthood in research (Rokach 2000, Victor & Yang, 2012) and older adults (65+ years). Prevalence rates for each sub-population needed to be reported as either a percentage (%) or number of the total sample from which it came (*n*). Where studies used different age categories to represent younger and older adults; the studies were included if it was reported, or could be reasonably hypothesised, that a large proportion of the participants were likely to fall within the specified age range of 18 – 30 years and 65 years+. Studies involving populations identified as having current significant psychiatric, intellectual, developmental, neurological or physical disabilities, beyond those typical of normal ageing, were excluded due to the likelihood that those factors will have a strong confounding impact on loneliness. Studies with participants of immigrant status or reporting current substance misuse were also excluded for the same reasons.

Observational studies including prospective and retrospective cohort studies, case-control, cross-sectional and longitudinal studies were included. All other study designs were excluded, such as experimental, qualitative studies and review articles.

Published reports based on surveys conducted by official government or healthcare agencies were included if the findings had been referenced in other included, peer reviewed papers. Where multiple government or public health reports/surveys were available for the same nation, only the most recently published data were included. Where prevalence data from the same population was used and reported in more than one study, only the most recently published study was included.

Studies published from year 1990 onwards were included. This decision was made on the basis that the last published review on age differences in loneliness that the authors could identify was completed in 1990 by Daniel Perlman. The current review would provide an update on studies published after that date.

Information Sources

A comprehensive search of the literature was conducted. The databases of PsycARTICLES, PsycINFO, MEDLINE Complete and SCOPUS were searched to identify relevant published articles. Hand searches were performed on the reference lists of included studies. Where full datasets were not reported in studies meeting inclusion criteria efforts were made to contact the authors directly and data was retrieved where possible. Surveys commissioned by government or public health authorities referenced in studies meeting inclusion criteria identified in the electronic searches were independently sourced via electronic depositories.

Search Strategy

The first author performed the search using the keywords and search strategies outlined in Table 1 (Appendix A). All databases were searched from 1st January 1990 to 13th August 2018 and limited to the English language. Eligibility assessment was

conducted in a non-blinded manner. The first author performed the initial screening of the titles and abstracts, whereby clearly irrelevant articles were excluded. At the point of screening full texts, the first reason encountered as to why a study did not meet inclusion criteria was recorded. The full text articles identified as meeting inclusion criteria for the review by the first author were screened by the second author and agreement of inclusion criteria assessed.

Data extraction

A data extraction spreadsheet was developed to record variables considered of interest to the review. Extracted information included: study details (date, title, authors, year, journal), study method (study design, duration/survey dates, sample size, age range, demographics, outcomes assessed, loneliness outcome measurement tool, qualitative and quantitative definitions of loneliness and data analysis methods) and results (prevalence n/N %).

Quality assessment

Included studies were assessed for risk of bias using an adapted version of the Joanna Briggs Institute (JBI) Prevalence Critical Appraisal Tool (Table 2. Appendix B), developed for appraising systematic reviews of prevalence and incidence data (Munn et al., 2014). Adaptions were made with regards to (i) whether a validated measure was used to assess loneliness, (ii) whether a valid qualitative description of loneliness was provided and (iii) whether the publication or report was peer reviewed. Other items also assessed included sample characteristics, considering the appropriateness of the sample frame in relation to the target population and participant recruitment methods, description of the study subjects and settings, data analysis methods, adequacy of response rates and response rate management. The quality assessment tool included 11 questions, with a

possible score of 22. Studies were given a rating of two for an item if it was well addressed, one if it was partially addressed or unclear, or zero if it was poorly addressed. A final global score was calculated for each study. A study was considered of high quality (and low risk of bias) if the score was at least 75 per cent of the total (≥16.5), of medium quality if it was between 50–75 per cent of the total (11-16.5) and low quality if below 50 per cent of the total (≤11) (Polyakova et al., 2013). All studies were rated by the first author and 20 per cent were rated by the second author, the kappa coefficient of 0.79 demonstrated good inter-rater reliability (McHugh, 2012).

Data synthesis

A narrative synthesis approach was conducted to address the review aims. The diverse nature of the data reported, and instruments used, along with a relatively small number of studies meeting inclusion criteria, precluded a quantitative meta-analysis.

Results

Study selection

The process of study selection for inclusion in the systematic review can be seen in the PRISMA diagram (Figure 1). The database searches produced 2,368 articles and a further 26 were identified through hand searching. After the removal of duplicates, 1,831 titles and abstracts were reviewed. A significant proportion of papers were excluded at the abstract screening stage for not meeting inclusion criteria. The full texts of the remaining 59 articles were screened. Forty-eight were further excluded; 35 did not report adequate prevalence data, six did not report data for both young and older adults, three reported data which overlapped with another study, one did not use an adequate measure

of loneliness and three were of the wrong publication type. Eleven articles were retained for inclusion in the final review.

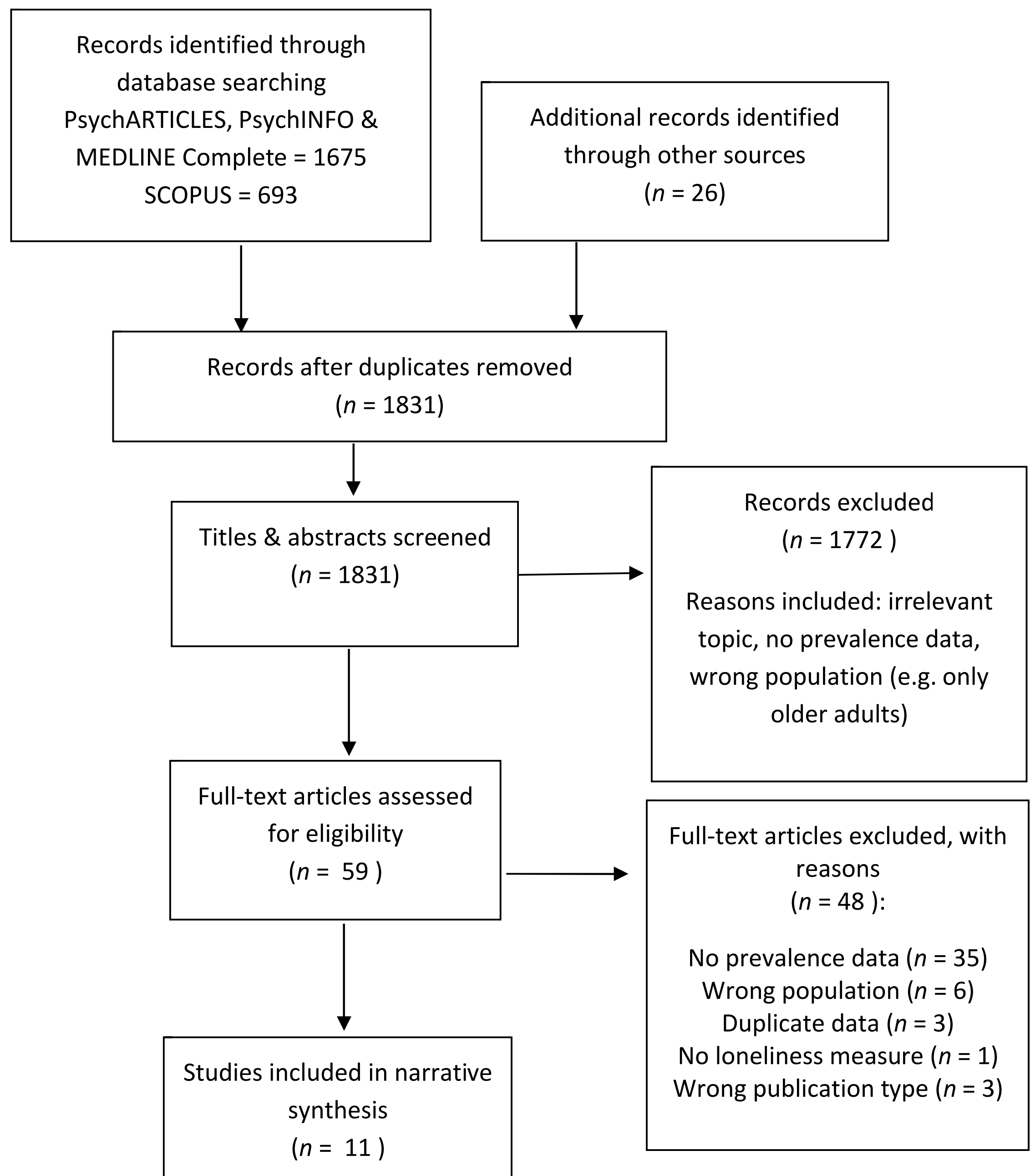

Fig.1. PRISMA flowchart of study selection process.

Study characteristics

The key characteristics of the 11 included studies are provided in Table 3 (Appendix C) with their quality appraisal score. Seven were academic peer-reviewed

papers, four were government or public health commissioned reports. All 11 studies were published between 2008 – 2017. The data collection period reported ranged from 2006 – 2016. Nine of the studies reported on data from one country only; six from European countries, one from Australia, one from New Zealand and one from Singapore. Two studies reported on data from multiple countries, one included nine members of the EU/EEC and Georgia, the other 25 members of the EU/EEC. All eleven studies were cross-sectional surveys. Samples sizes ranged from 1,502 to a population-based approach estimated as 4,509,900. The overall sample across the 11 studies was approximately 4,778, 017, excluding the population-based study this figure is 268,117. Eight of the studies reported gender distributions with a slight female bias (ranging from 50.6% - 59.2%) in all studies except one where there was a minor male bias (50.8%) in the group of 16 – 29-year olds. The age ranges across all studies for those classified in the young adult category ranged between 15 – 39 years, for older adults the range was from 55 years with no upper limit for some studies.

Loneliness was measured using a validated loneliness questionnaire in three studies (University of California Los Angeles (UCLA) scale, (Russell, 1996), De Jong-Gierveld Loneliness scale (De Jong Gierveld & van Tilburg,1999),Three-Item Loneliness Scale (TILS; Lasgaard, 2007), a Danish, short-form adaption of the UCLA). The remaining eight studies used a single item question to assess loneliness, response options and how the authors differentiated those lonely and not lonely varied between studies (for further details please see Table 3. Appendix C).

The other outcomes assessed in each study in addition to loneliness varied and will be summarised here. Six studies looked at general or physical health factors (subjective health, GP contact, disability, hospital admissions), six studies assessed social capital including measures of social isolation, social connectedness, social contact and

social well-being. Five studies considered mental health factors (depression, anxiety, previous psychiatric treatment, prolonged mental health disorders), four studies considered education level, four studies assessed living arrangements or housing status (such as housing tenure, household size), three studies assessed marital and/or parental status, three studies considered employment factors, three studies looked at nationality, three studies assessed lifestyle factors (smoking, drinking, exercise, eating habits, leisure and recreation), two studies assessed financial factors, one study assessed ethnicity, another cultural identity and one study looked at online contact and technology usage.

Quality assessment and risk of bias

Variability in quality and risk of bias was evident (Table 3. Appendix C). Three studies were assessed as high quality and with a low bias risk, six scored in the medium range and two were assessed as low quality and at a high risk of bias. Of the four publications which were not academic papers, two of these obtained a low score, one commissioned by a Mental Health Foundation in the UK (Griffin, 2010) and the other by the Ministry of Social Development in New Zealand (Ministry of Social Development, 2016). The remaining two were of medium quality and commissioned by the Australian Housing and Urban Research Institute (Franklin & Tranter, 2011) and the Department of Health and Children in Ireland (Morgan et al. 2008).

Prevalence of loneliness

The prevalence of loneliness varied across publications, both within and between the identified subpopulations. In seven of the 11 studies young adults reported higher levels of loneliness than older adults (Franklin & Tranter, 2011; Ge et al., 2017; Griffin, 2010; Lasgaard et al., 2016; Ministry of Social Development, 2016; Nyqvist, Victor, Forsman, & Cattan, 2016; Richard et al., 2017). Four studies found older adults to

experience greater levels than the young (Hansen & Slagsvold, 2016; Morgan et al., 2008; Nicolaisen & Thorsen, 2017; Yang & Victor, 2018). The highest levels of loneliness experienced by young adults was reported by Richard et al. (2017) with 42.5 per cent of 15 – 24 year-olds feeling lonely compared to 31 percent of 65+ year olds. The highest prevalence reported for older adults was by Hansen and Slagsvold (2016) with 47.9 per cent of older adults in Georgia reporting feeling lonely compared to 13.8% of young adults. Eight of the studies (Ge et al., 2017; Giffin 2010; Lasgaard et al., 2016; Morgan et al., 2008; Nicolaisen & Thorsen, 2014; Nyqvist et al., 2016; Richard et al., 2017; Yang & Victor, 2018) provided sufficient population data to allow for a pooled prevalence of loneliness to be calculated. Based on a combined population of 63, 072 (consisting of 26, 481 young adults and 36, 591 older adults), results indicated a prevalence of 21.1 per cent in the young and 17.4 per cent in the older (Table 4. Appendix D).

Prevalence by measurement method

Ge et al. (2017) used the UCLA scale and reported prevalence rates of 35.2 per cent in young adults and 19.4 per cent in older adults. Using the TILS Lasgaard et al. (2016) reported 26.7 per cent of young adults identified as being as moderately or severely lonely compared to 12.2 per cent of older adults. Hansen and Slagsvold (2016) found a higher prevalence of loneliness in older adults across all 11 countries (ranging from 10.1% to 47.9%) compared to young adults (ranging from 4.7% to 18.0%) when using the De Jong Gierveld loneliness scale. The other eight studies used a single item question to assess loneliness; five reported higher rates in young adults (Franklin & Tranter, 2011; Griffin, 2010; Ministry of Social Development, 2016; Nyqvist et al., 2016; Richard et al., 2017) and three in older adults (Nicolaisen & Thorsen, 2014; Morgan et al., 2008; Yang & Victor, 2018).

Prevalence by quality ratings

Table 3. (Appendix C) details the individual study quality assessment scores calculated using an adapted version of the JBI critical appraisal tool for prevalence studies (Table 2. Appendix B). The three studies which achieved a high quality rating, indicating a low risk of bias, reported a higher prevalence of loneliness in young adults when compared to older adults (Ge et al., 2017; Lasgaard et al., 2016; Richard et al., 2017) with a pooled prevalence of 33.8 per cent and 18.0 per cent respectively. Six studies were rated of medium quality, two of which reported higher rates in young adults (Franklin & Tranter, 2011; Nyqvist et al., 2016) and four in older adults (Hansen & Slagsvold, 2016; Morgan, 2008; Nicolaisen & Thorsen, 2014; Yang & Victor, 2018). Two publications were considered of low quality and a high risk of bias (Griffin, 2010; Ministry of Social Development, 2016) both of which reported younger adults as more frequently lonely.

Factors associated with loneliness across both age groups

Other variables and their effect on loneliness were assessed across the studies. Partner status and living arrangements were frequently found to have an impact on reported levels loneliness across the age categories (Franklin & Tranter, 2011; Lasgaard et al., 2016; Ministry of Social Development, 2016; Nicolaisen & Thorsen, 2014; Richard et al., 2017). Being single (Franklin & Tranter, 2011), divorced or widowed (Franklin & Tranter, 2011; Ge et al., 2017) were associated with higher levels of loneliness whereas being married (Nicolaisen & Thorsen, 2014) or living together as a couple (Ministry of Social Development, 2016; Nicolaisen & Thorsen, 2014) appeared to be protective against loneliness. Ge et al. (2017) found living with a spouse with, and without, children was associated with lower levels of loneliness whereas living with

child(ren) and no spouse or living with others outside of the family unit was associated with higher levels of loneliness. Similarly, the Ministry of Social Development (2016) report found those living in sole-parent households with one or more children were more likely to report feeling lonely (25.6%) than people who lived as couples with or without children (11.9% and 9.5% respectively). Furthermore, those not living in a family nucleus (18.9%) were more likely than people living as couples to report feeling lonely. Franklin and Tranter (2011) found a U-shaped relationship between household size and loneliness, with single households (40%) most likely to agree that they experience loneliness as a problem, followed by those in the largest households (27%). This supports the notion that loneliness is more strongly related to the quality rather than quantity of one's relationships, with loneliness occurring both in the presence or absence of other people.

Health factors were found to be related to loneliness in a number of studies (Franklin & Tranter, 2011; Hansen & Slagsvold, 2016; Lasgaard et al., 2016; Nicolaisen & Thorsen, 2014; Richard et al., 2017). Higher reports of loneliness were evident in those with poorer perceived subjective health (Franklin & Tranter, 2008; Nicolaisen & Thorsen, 2016; Richard et al., 2017). Various measures of actual health status were also associated with loneliness such as high cholesterol and diabetes (Richard et al., 2017). Franklin and Tranter (2008) found those in poor health were almost five times as likely as those in good or excellent health to experience frequent loneliness. Greater number of GP contacts, life-threatening somatic conditions and hospital admissions were related to greater levels of loneliness in Lasgaard et al.'s (2016) study.

The impact of social relationship factors on loneliness was directly addressed in three of the reviewed studies (Ge et al., 2017; Magnhild Nicolaisen & Thorsen, 2014; Nyqvist et al., 2016). Greater social connectedness with relatives and friends was

associated with lower levels of loneliness in the Ge et al. (2017) study. Nicolaisen and Thorsten (2017) reported dissatisfaction with contact with friends and wanting more contact with friends as associated with greater loneliness across all age groups. Similarly, Nyqvist et al. (2016) found infrequent social contacts with friends and neighbours, feelings of low trust and a weak sense of neighbourhood belonging related to increased experiences of loneliness in both young and older adults. The findings appear to support modern conceptualisations of loneliness as occurring when the quality of one's social relationships are perceived as dissatisfactory and failing to meet one's needs, irrespective of age. In their research on loneliness from late adolescence to oldest old, Luhmann and Hawkley (2016) found social engagement, number of friends, and the frequency of various forms of social contact to be universal predictors of loneliness regardless of an individual's age or life-span perspective.

Four studies directly explored the relationship between mental health factors and loneliness (Ge et al., 2017; Griffin, 2010; Lasgaard et al., 2016; Richard et al., 2017). Ge et al. (2017) reported a moderate correlation between loneliness and depressive symptoms, with those who felt lonely reporting higher depressive symptoms than those who did not. Across their total adult sample Griffin (2010) found 47 per cent of women and 36 per cent of men had felt depressed because they felt alone. Richard et al. (2017) found those reporting moderate to high levels of psychological distress assessed by the 5-item mental health index (MHI-5) and those scoring ten or more on the patient health questionnaire (PHQ-9) assessing depressive symptomology, also reported greater levels of loneliness across the adult population. Furthermore, Lasgaard et al. (2016) found, along with ethnic minority status, prolonged mental disorder demonstrated the strongest relationship with severe loneliness when adjusting for all other factors, with psychiatric treatment also strongly associated with severe loneliness.

The relationship between employment status and loneliness appears inconclusive. On the one hand employment can provide an opportunity to broaden one's social network and form social connections which may serve to protect against loneliness. On the other, Luhmann and Hawkley (2016) propose employment may restrict one's available leisure time and consequently lead to fewer interactions with friends and family leading to higher levels of loneliness. Two studies in the current review directly assessed employment factors and loneliness (Ge et al., 2017; Ministry of Social Development, 2016). In the MSD 2016 report, those in the lower material wellbeing index category reported higher levels of loneliness (27.1%) than those in the higher material wellbeing index category (6.6%). Unemployed people were also more likely to report feeling lonely (22.7%) compared with employed people (12.1%) and those not in the labour force (16.9%). Those who reported feeling lonely in the Ge et al. (2017) study were more likely to be unemployed also.

Factors associated with loneliness in young adults

Griffin (2010) found young adults were more likely to experience low mood or anxiety in relation to their loneliness. 53 per cent of young adults reported feeling depressed due to feeling lonely and 36 per cent reported worrying about feeling lonely. Griffin also found that 31 per cent of young adults reported spending too much time communicating online rather than in person however they did not directly test whether this was related to the increased levels of loneliness reported in that subpopulation. Lasgaard et al. (2016) found female gender, low or medium educational level, living in a deprived area, ethnic minority status, unemployment, prolonged mental disorder and living alone were all factors associated with greater levels of loneliness in their sample of young adults. Nicholaisen et al. (2017) found young adults reporting less contact with friends and no confidants were significantly lonelier. Similarly, Nyqvist et al. (2016)

found young adults with infrequent social contacts with friends and neighbours were experiencing higher levels of loneliness. Richard et al. (2017) found young adults who currently smoked or had ever smoked were lonelier.

Factors associated with loneliness in older adults

In the Griffin (2010) report older adults were the group least likely to be proactive about seeking help for their loneliness (8%). Hansen and Slagsvold's (2016) found considerable between-country heterogeneity in late-life loneliness which they attributed to inequalities in socioeconomic resources, health and marital status. They found having a partner strongly correlated with men's loneliness, more so than for women and loneliness was inversely related to educational level and number of children, more so for women than for men. The Hansen and Slagsvold study also found financial satisfaction and subjective health strongly correlated with loneliness for both genders in the older adult category, though slightly more so for women than men. Finally, they found for women in the older adult population disability was associated with greater loneliness but not so in men. Lasgaard et al. (2015) found for those in the 60 – 74-year-old group receiving disability pensions, living alone and living in a village or countryside was associated with higher levels of loneliness. Being employed was associated with less loneliness in older adults in the Nicholaisen et al. (2017) study. Infrequent contact with neighbours (Nyqvist et al, 2016) and visits to a physician within the last year (Richard et al., 2017) were also associated with greater levels of loneliness in older adult populations.

Factors not found to be associated with loneliness

In the Lasgaard et al. (2016) study urbanisation was the only factor not found to be associated with loneliness. In the Hansen and Slagsvold (2016) study, when looking

at Eastern European countries, living arrangement, children, employment and education were only found to mediate a small proportion of reported loneliness levels across the age categories. The MSD report (2016) did not find a relationship between ethnicity and loneliness in New Zealand, with each ethnic group reporting similar rates of loneliness.

Discussion

The prevalence of loneliness varied across publications both within and between the identified subpopulations. In seven of the 11 studies young adults reported higher levels of loneliness than older adults (Franklin & Tranter, 2011; Ge et al., 2017; Griffin, 2010; Lasgaard et al., 2016; Ministry of Social Development, 2016; Nyqvist et al., 2016; Richard et al., 2017). Four studies found older adults to experience greater levels than the young (Hansen & Slagsvold, 2016; Morgan et al., 2008; Nicolaisen & Thorsen, 2017; Yang & Victor, 2018). A pooled prevalence of 21.1 per cent in young adults and 17.4 per cent in older adults was calculated across eight studies where proportion data was available. Previous studies on loneliness have identified these age categories as experiencing high levels of loneliness (Perlman, 1990; Pinquart & Sorensen, 2003; Qualter et al., 2015). The present review would suggest that risk is greatest in young adulthood where the highest rates are reported when compared to older adults in the same population. When looking at the timeline of the data collection period for each study it's interesting to note that, generally, the four studies which found older adults to be lonelier were conducted earlier (covering a period from 2004 - 2011) and the later surveys found higher rates in the young (covering a period from 2009 – 2016). This may reflect a pattern where younger adults are becoming increasingly lonelier over time.

The studies varied in terms of quality, ranging from low to high. There was no discernible pattern between whether a paper was of high or low quality and the

prevalence rates reported for each age category. The three papers which achieved the highest quality ratings and the two which received the lowest both found young adults to be lonelier than older adults. Attempts to minimise the influence of bias, giving greater credence to the more methodologically robust studies did not significantly impact the overall findings. Prevalence rates were also considered based on the type of measurement approach employed however findings also varied significantly between studies for those using single direct measures and those employing an indirect measurement scale. Researchers have suggested face-valid questions about loneliness can elicit an age-bias in reporting, with older adults more likely to report feeling lonely than young adults as it is deemed more age-typical and less stigmatising (Luhmann & Hawkley, 2016). The high prevalence of young adults reporting loneliness across the present review, using both direct and indirect measures, might suggest young adults are more willing to report this subjective experience than previously thought. The notion of loneliness as stigmatising and limited to the elderly may be shifting as we witness a readiness to acknowledge and report this phenomenon in young adults.

In this review the factors consistently associated with greater levels of loneliness across both age categories were living alone or without a significant other, poorer subjective and/or objective physical health, dissatisfaction with social relationships, higher levels of psychological distress and unemployment. Intuitively, one might expect a direct positive correlation between these factors and loneliness. Indeed being married is frequently cited as protective against loneliness in the literature, particularly in older adult research (Chen, Hicks, & While, 2014) whilst living alone has robustly been associated with higher levels of loneliness (Stack, 1998). Interestingly however Luhmann and Hawkley's (2016) research found when all other covariates were controlled (such as gender, income, work status, social contact, relationship status) both

young and older adults living alone were significantly less lonely than those living with others, suggesting the relationship between different risk factors and loneliness may not be such a straightforward one. The review found higher levels of psychological distress to be associated with greater loneliness in both age categories. Loneliness is increasingly gaining attention in the field of mental health. In a systematic review Wang et al. (2018) found loneliness was related to more severe depression and anxiety symptoms and poorer remission rates in depression. Loneliness can precede or follow a period of poor mental health (Richard et al., 2017) potentially perpetuating psychological distress. The prevalence of loneliness has important implications for the psychological well-being of the population, yet the evidence base for preventative and therapeutic interventions is scarce (Wang et al. 2018). Developing targeted interventions to alleviate loneliness for young and older adults may help to improve mental health outcomes for each of these sub-populations.

In Western societies we are seeing a shift in social and societal norms, with a trend towards increasing numbers of people living alone, with less quality interpersonal connections and higher rates of divorce and re-partnering (Nicolaisen & Thorsen, 2017). Increasing numbers of young adults are returning to live at home after leaving college and challenging economic conditions has made launching a career in young adulthood increasingly difficult (Smith et al., 2017). Socio-economic factors can impact upon opportunities to develop and maintain meaningful social connections, protective against loneliness. Changes in infrastructure such as the closing down of community centres and public spaces, along with high living costs, makes it increasingly difficult for people to make connections to the outside world. The ever-increasing dominance of the internet and social media in forming and maintaining social connections makes it a key area to consider in terms of the risk to, and/or protection against, loneliness. Whether it is the

quality or quantity of social connections that are important in preventing loneliness and its associated health risks, a narrowing of the opportunities to make meaningful connections may be a factor in the high levels of loneliness reported in young adults. Much like the reduction in social networks and meaningful relationships in later life can result from developmental transitions of old age (retirement, poor health, bereavement), a failure to achieve successful and timely transitions in young adulthood (finding employment, establishing a home, finding a partner) may similarly be a risk for loneliness in this stage of life.

Strengths and limitations of the review

The use of a thorough and robust search strategy and screening process was a strength of the present review. Initial searches were kept broad to ensure important publications were not missed and where data was absent from published reports authors were contacted directly and original source data obtained and included. As with most systematic reviews there is a possibility that our literature search failed to identify all studies relating to the prevalence of loneliness in young and older adults. The review included studies employing cross-sectional surveys which meant sample sizes were large, the pooled prevalence findings reported were calculated from a total population of 26,481 young adults and 36,591 older adults.

Differences in sample characteristics and quantitative measurement approaches make it difficult to comprehensively assess and reliably compare the prevalence of loneliness amongst young and older adults. A major limitation of the current review was the different measurement approaches and the quantitative categorisation of loneliness used across the different studies. Only three studies used validated loneliness questionnaires. Different measurement approaches are routinely used in loneliness

research. Single item self-rating questions, such as ‘How often do you feel lonely?’ are commonly used in Britain, Europe and North America (Nicholaisen & Thorsen, 2014). Although a simple and direct way of assessing loneliness, it’s highly subjective and open to individual interpretation and bias. In the present review the criteria by which authors quantified respondents as ‘Lonely’ or ‘Not Lonely’ was inconsistent across studies. Furthermore, some would argue that questions using the word ‘lonely’ or ‘loneliness’ are vulnerable to under-reporting due to the social stigma attached to the experience of loneliness (De Jong Gierveld, van Tilburg & Dykstra, 2006). Measurement scales such as the UCLA Loneliness Scale (Russell, 1996) and the De Jong Gierveld Loneliness Scale (De Jong Gierveld & Van Tilburg, 1999) which indirectly access loneliness were specifically designed to overcome the difficulty of stigma and under-reporting. The use of different measurement approaches to assess the same theoretical construct are problematic when trying to compare findings across studies or combine results in a quantitative fashion. Shiovitz-Ezra and Ayalon (2012) explored the agreement between two measurement approaches to loneliness, using a single direct question and the UCLA loneliness scale, in a sample of 2,000 adults over 55 years. They discovered 57 percent of responders who reported being lonely on the direct item were classified as not lonely on the validated scale. Nicolaisen and Thorsen (2014) found direct and indirect measures of loneliness produced a different picture of loneliness in different age groups. When using a single item direct question in a group of 18 – 81-year-olds, the youngest group (18 – 29 years) and the oldest group (65 – 81) reported the highest levels of loneliness. Using the De Jong Gierveld Scale however they found a significant positive linear relationship between age and loneliness, with the older lonelier. The use of different approaches in the present review makes it difficult to compare findings and reliably claim younger adults are more lonely than older. Nicolaisen and Thorsen (2014) propose

a new scale be developed which more reliably taps the complexities of the experience of loneliness in different age groups in society.

The use of cross-sectional surveys is problematic due to poor response rates and susceptibility to respondent and selection bias. A number of studies reported an under-representation of certain age groups in their data (Lasgaard et al., 2016; Nicolaisen & Thorsen, 2017; Nyqvist et al., 2016). Some studies tried to compensate for poor response rates using weightings in their analyses (Ge et al., 2017; Lasgaard et al., 2016; Richard et al., 2017). Although this helps to reduce the risk of bias, the representativeness of the samples and the generalisability of the findings are still somewhat limited by this methodological factor. When considering the other factors associated with loneliness, the cross-sectional nature of the research also prevents any causal relationships from being inferred.

A further limiting factor could be the use of a quality assessment measure that was specifically designed for assessing prevalence data reported in journal articles. Although this should be considered a strength when assessing the peer reviewed papers included in this study it may not have been the most suitable to tool to assess the quality of the public health and government produced reports. These two differing publication formats have different purposes and approaches to research, with implications for the data collection and reporting processes. It could be considered biased to use an assessment tool which was developed for one publication format and not the other, as in this instance.

Finally, the review sought to explore the prevalence of loneliness in young adults (quantified as 18 – 30 years) and older adults (65+ years) however the studies included varied in how they grouped their participants by age, meaning some deviation from the

inclusion criteria was required. Four studies included participants as young as 15 years (Ministry of Social Development, 2016; Nyqvist et al, 2016; Richard et al, 2017; Victor & Yang, 2011) and two included participants over 30 years (Ge et al., 2017; Griffin, 2010) in their young adult group. This has implications for whether those samples could truly be considered representative of young adults and complicates comparisons across studies employing different sampling criteria. The older adult category was defined as 65 years and above, with no upper limit. The criteria of 65 years upwards is commonly used to indicate older age in the literature however it could be queried as to whether that is still an accurate reflection of today's society. With an increasing retirement age, improvements in age-related physical healthcare and the promotion of active ageing the classification of 65 years plus as 'older adulthood' may be an outdated one. In some older adult research distinctions are made between 'young old', 'middle old' and 'oldest old', with the oldest old generally being 80 years upwards. It is likely that well-being factors may vary quite significantly within these sub-groups of older adults. It is possible loneliness may be less of a problem for the 'young old' but increases as one progresses further into later life, however this would not necessarily be reflected in the data when the groups are combined. In the current review the decision was made to use the criteria of 65 years upwards to maximise the inclusion of relevant papers however this may have skewed the overall findings for the prevalence of loneliness in the oldest old.

Conclusion and future directions

The prevalence of loneliness in both young and older adults is high. This picture of loneliness has remained relatively consistent since Perlman's 1990 meta-analysis of age differences in loneliness. The current review would suggest young adults may be experiencing levels of loneliness that are starting to supersede those of older adults, laying rest to the archaic conceptualisation of loneliness as a problem of old age. The

factors associated with loneliness appear complex and unclear. This review suggests there may be a multitude of factors which vary across age categories and are influenced by what measure of loneliness is used. Future research to unpack and clarify these themes may benefit from a more theory driven approach which considers the potential impact of age-related transitions on loneliness. Furthermore, the papers included in the current review did not directly address the relationship between loneliness and social media or internet use. Further research to unpick and clarify potential age differences in loneliness and internet use might also be useful, particularly when planning prevention and intervention strategies for different age groups.

Loneliness is often temporary and from an evolutionary perspective it has an adaptive purpose, signalling to the individual the need to seek out contact and connection. We must be cautious not to pathologise loneliness however Qualter et al. (2015) found those individuals following a trajectory of high stable or increasing loneliness showed relatively poor mental and physical health. Tackling high levels of loneliness in young adults may be instrumental in preventing transient experiences of loneliness from developing into more prolonged and painful experiences, with deleterious effects on mental and physical health. The high prevalence of young adults reporting their experiences of loneliness might suggest the stigma of loneliness is lifting, making lonely people potentially easier to reach and open to intervention. The factors associated with loneliness in young adults, particularly in the context of an evolving socio-economic landscape, are less clearly understood. Most loneliness studies to date have focused on explanations for loneliness in children, adolescents and older adults (Luhman & Hawkley, 2016). Caution must be taken not to simply extrapolate from findings established through studies of potentially very different populations. Future research adopting an age-normative approach to loneliness might be helpful to better

understand the factors associated with high levels of loneliness in young adults, valuable information to inform spending on health, education and housing policies to tackle the problem of loneliness and its associated physical and mental health risks.

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Appendix A

Table 1. Search strategy and key terms

Concepts	Search terms
Prevalence[1]	‘prevalen*’ OR ‘inciden*’ OR ‘survey*’ (MeSH terms included ‘Prevalence’ OR ‘Cross-Sectional Studies’ OR ‘Incidence’ OR ‘Cohort Studies’ OR ‘Surveys and Questionnaires’ OR ‘Longitudinal Studies’ OR ‘Health Care Surveys’ OR ‘Health Surveys’)
Loneliness[2]	‘lonel*’ OR ‘social isolat*’ (MeSH terms included ‘Loneliness’ OR ‘Social isolation’)
Type of participants[3]	‘old* adults’ OR ‘elderly’ OR ‘old* people’ OR ‘geriatric’ OR ‘aged’ OR ‘young people’ OR ‘youth’ OR ‘young adult*’ (MeSH terms included ‘Aged’ OR ‘Aged, 80 and over’ OR ‘Young adult’)
Combined	1 2 AND 3

Note: For the databases PsycARTICLES, PsycINFO and MEDLINE Complete the key words were searched for in the abstracts and title of texts. The SCOPUS search was limited to articles, reviews and conference papers, and all key words were searched for in the titles and abstracts of articles.

Appendix B

Table 2. Joanna Biggs Institute Critical Appraisal Tool (adapted) and guidance notes

	Yes (2)	Unclear or N/A (1)	No (0)
1. Was the sample frame appropriate to address the target population?			
2. Were study participants sampled in an appropriate way?			
3. Was the sample size adequate?			
4. Were the study subjects and the setting described in detail?			
5. Was the data analysis conducted with sufficient coverage of the identified sample?			
6. Was a validated measure used to assess loneliness?			
7. Was a valid qualitative description of loneliness provided?			
8. Was the condition measured in a standard, reliable way for all participants?			
9. Was there appropriate statistical analysis?			
10. Was the response rate adequate, and if not, was the low response rate managed appropriately?			
11. Was the paper or report peer reviewed?			
Overall appraisal score (Total score)			
Overall quality score (High, medium, low)			

1. This question relies upon knowledge of the broader characteristics of the population of interest and the geographical area. If the study is of women with breast cancer, knowledge of at least the characteristics, demographics and medical history is needed. The term "target population" should not be taken to infer every individual from everywhere or with similar disease or exposure characteristics. Instead, consider specific population characteristics in the study, including age range, gender, morbidities, medications, and other potentially influential factors. For example, a sample frame may not be appropriate to address the target population if a certain group has been used (such as those working for one organisation, or one profession) and the results then inferred to the target population (i.e. working adults). A sample frame may be appropriate when it includes almost all the members of the target population (i.e. a census, or a complete list of participants or complete registry data).

2. Studies may report random sampling from a population, and the methods section should report how sampling was performed. Random probabilistic sampling from a defined subset of the population (sample frame) should be employed in most cases, however, random probabilistic sampling is not needed when everyone in the sampling frame will be included/ analysed. For example, reporting on all the data from a good census is appropriate as a good census will identify everybody. When using cluster sampling, such as a random sample of villages within a region, the methods need to be clearly stated as the precision of the final prevalence estimate incorporates the clustering effect. Convenience samples, such as a street survey or interviewing lots of people at public gatherings are not considered to provide a representative sample of the base population.

3. The larger the sample, the narrower will be the confidence interval around the prevalence estimate, making the results more precise. An adequate sample size is important to ensure good precision of the final estimate. Ideally, we are looking for evidence that the authors conducted a sample size calculation to determine an adequate sample size. This will estimate how many subjects are needed to produce a reliable estimate of the measure(s) of interest. For conditions with a low prevalence, a larger sample size is needed. Also consider sample sizes for subgroup (or characteristics) analyses, and whether these are appropriate. Sometimes, the study will be large enough (as in large national surveys) whereby a sample size calculation is not required. In these cases, sample size can be considered adequate. When there is no sample size calculation and it is not a large national survey, the reviewers may consider conducting their own sample size analysis using the following formula: (Naing et al. 2006, Daniel 1999)

4. Certain diseases or conditions vary in prevalence across different geographic regions and populations (e.g. Women vs. Men, sociodemographic variables between countries). The study sample should be described in sufficient detail so that other researchers can determine if it is comparable to the population of interest to them.

5. Coverage bias can occur when not all subgroups of the identified sample respond at the same rate. For instance, you may have a very high response rate overall for your study, but the response rate for a certain subgroup (i.e. older adults) may be quite low.

6. Here we are looking for measurement or classification bias. Many health problems are not easily diagnosed or defined, and some measures may not be capable of including or excluding appropriate levels or stages of the health problem. If the outcomes were assessed based on existing definitions or diagnostic criteria, then the answer to this question is likely to be yes. If the outcomes were assessed using observer reported, or self-reported scales, the risk of over-or under-reporting is increased, and objectivity is compromised. Importantly, determine if the measurement tools used were validated instruments as this has a significant impact on outcome assessment validity.

7. Did the study provide a clear description of the meaning of loneliness based on a broadly accepted classifications (such as Perlman 1982, Weiss 1973), was it clear the study was measuring the subjective experience of loneliness and not a related but distinct concept such as social isolation

8. Considerable judgment is required to determine the presence of some health outcomes. Having established the validity of the outcome measurement instrument (see item 6 of this scale), it is important to establish how the measurement was conducted. Were those involved in collecting data trained or educated in the use of the instrument/s? If there was more than one data collector, were they similar in terms of level of education, clinical or research experience, or level of responsibility in the piece of research being appraised? When there was more than one observer or collector, was there comparison of results from across the observers? Was the condition measured in the same way for all participants?

9. Importantly, the numerator and denominator should be clearly reported, and percentages should be given with confidence intervals. The methods section should be detailed enough for reviewers to identify the analytical technique used and how specific variables were measured. Additionally, it is also important to assess the appropriateness of the analytical strategy in terms of the assumptions associated with the approach as differing methods of analysis are based on differing assumptions about the data and how it will respond.

10. A large number of dropouts, refusals or “not founds” amongst selected subjects may diminish a study’s validity, as can a low response rates for survey studies. The authors should clearly discuss the response rate and any reasons for non-response and compare persons in the study to those not in the study, particularly with regards to their socio-demographic characteristics. If reasons for non-response appear to be unrelated to the outcome measured and the characteristics of non-responders are comparable to those who do respond in the study (addressed in question 5, coverage bias), the researchers may be able to justify a more modest response rate.

11. Was it published in a peer reviewed journal or if not was there evidence that it had been through a peer review process?

Appendix C. Table 3. Study characteristics and quality ratings

Study	Survey date / duration	*n*	Age range for young adults	Age range for older adults	Measure of loneliness	Quantitative definition of loneliness
Franklin & Tranter (2011)	2009	1,502	18 - 24	65+	Single item question *'How often do you personally experience loneliness in your life?'*	Once a day+, once a week+, once a month+, once a year+, less often/never
Ge et al. (2017)	2015 - 2016	1,942	21 – 39	60 – 74, 75+	UCLA 3 item loneliness scale	Scores 3-5 = not lonely, 6-9 = lonely
Griffin (2010)	2010	2,256	18 - 34	55+	Single item question *"How often do you feel lonely"*	Often, sometimes, rarely, never
Hansen & Slagsvold (2016)	2004 – 2011	132,319	18 - 30	71 - 80	De Jong-Gierveld Loneliness Scale	Dichotomised additive scores (0-12), scores ≥ 6 indicate 'lonely'
Morgan et al. (2008)	2007	10,364	18 - 29	65+	Single item question *'Have you often felt lonely in the last 4 weeks?'*	Yes or no
Lasgaard et al. (2016)	2013	33,285	16 - 29	60 – 74, 75+	TILS	Scores ≥ 5 moderate lonely, scores ≥ 7 severe loneliness

Ministry of Social Development (2016)	2014	Estimated population 4,509,900	15 - 25	65 – 74, 75+	Single item question	All of the time, Most….Some….A little, None… All, most and some of the time = 'Lonely'
Nicolaisen et al. (2017)	2007 - 2008	14,725	18 - 29	79 - 95	Single item question *"Do you feel lonely"*	Often, sometimes, seldom, never. Often and sometimes = 'Lonely'
Nyqvist et al. (2016)	2011	4,618	15 - 29	65 – 80	Single item question "Do you feel lonely"	Often, sometimes, seldom, never. Often and sometimes = 'Lonely'
Richard et al. (2017)	2012	20,007	15 – 19, 20 – 24	65 - 69, 70 -74, 75 - 79, 80+	Single item question "How often do you feel lonely?	Very often, quite often, sometimes, never – sometimes, quite/very often = 'Lonely'
Victor & Yang (2011)	2006-2007	47,099	15 - 30	60+	"Please tell me how much of the time during the past week you felt lonely"	None or almost none of the time, Some of the time, Most of the time, All or almost all of the time, Don't know. Almost all the time and Most of the time = 'Lonely'

Study	Prevalence young adults %	Prevalence older adults %	Quality rating
Franklin & Tranter (2011)	6.9 once a day+, 21.6 once a week+, 19.6 once a month+, 25.5 once a year+, 26.5 less often/never	.3 once a day+, 8.1 once a week+, 8.1 once a month+, 14.0 once a year+, 64.5.5 less often/never	11 (Medium)
Ge et al. (2017)	35.2%	60 - 74 = 21.3%, 75+ = 13.9%	20 (High)
Griffin (2010)	12% often, 45% sometimes, 31% rarely, 13% never	9% often, 26% sometimes, 36% rarely, 29% never	8 (Low)
Hansen & Slagsvold (2016)	Norway - 4.7%, Belgium - 8.1% France - 7.2%, Germany - 8.9% Poland - 5.5%, Czech - 12.7% Russia - 10.2%, Lithuania - 16.9% Bulgaria - 18.0%, Romania - 14.5% Georgia - 13.8%	Norway - 10.0%, Belgium - 12.2%, France - 13.5%, Germany - 14.9%, Poland - 15.0%, Czech - 27.5%, Russia - 28.9%, Lithuania - 33.8%, Bulgaria - 44.8%, Romania - 33.4%, Georgia - 47.9%	15 (medium)
Morgan et al. (2008)	12%	17%	14 (Medium)

Lasgaard et al. (2016)	22% moderate, 6.4% severe	60-74 yrs. - 11% moderate, 2.9% severe, 75+ yrs. - 15% moderate, 4.2% severe	21 (High)
Ministry of Social Development (2016)	16.8%	65 – 74 yrs. = 9.6%, 75+ = 12.5%	10 (Low)
Nicolaisen et al. (2017)	22.7%	25.4%	15 (Medium)
Nyqvist et al. (2016)	39.5%	27.3%	16 (Medium)
Richard et al. (2017)	15-19 yrs. - 41.4%, 20-24 yrs. - 43.5%	65-69 yrs. - 28.6%, 70-74 yrs - 26.5%, 75-79 yrs - 34.4%, 80+ yrs - 34.4%	19 (High)
Victor & Yang (2011)	6.8%	13.0%	13 (Medium)

Appendix D. Table 4. The proportion of young and older adults reported as Lonely

Study	**(n) young lonely**	**(N) young population**	**(n) old lonely**	**(N) old population**
Nyqvist et al. (2016)	306	774	295	1080
Nicolaisen et al. (2017)	580	2552	572	2249
Ge et al. (2017)	200	569	127	654
Lasgaard et al. (2016)	1422	5324	1454	11961
Griffin (2010)	365	650	283	808
Morgan et al. (2008)	229	1907	335	1969
Yang & Victor (2011)	709	10484	1620	12488
Richard et al. (2017)	1792	4221	1667	5382
Total	**5603**	**26481**	**6353**	**36591**
Prevalence (%)	**21.1**		**17.4**	

Appendix E.

Aging and Society author guidelines

Submission

Ageing and Society is an interdisciplinary and international journal devoted to the understanding of human ageing and the circumstances of older people in their social and cultural contexts. We invite original contributions that fall within this broad remit and which have empirical, theoretical, methodological or policy relevance. All submissions, regardless of category, are subject to blind peer-review. Authors are reminded of the requirement to avoid ageist and other inappropriate language and to avoid the stereotypical representation of individuals or groups.

All papers must be submitted using Manuscript Central: mc.manuscriptcentral.com/age

All books for review should be sent to: Caroline Norrie and Kritika Samsi, Social Care Workforce Research Unit, King's College London, Strand, London, WC2R 2LS

All submissions must conform to the submission guidelines outlined below. Failure to do so may result in the submission being rejected.

Article categories

Research articles

Research articles must contain between 3,000 and 9,000 words, excluding the abstract and references. Most papers usually have the following sections in sequence: Title page, Abstract (200-300 words), Keywords (three to eight), Main text, Statement of ethical approval as appropriate, Statement of funding, Declaration of contribution of authors, Statement of conflict of interest, Acknowledgements, Notes, References, Correspondence

address for corresponding author. However authors have the flexibility to organise the main text of article into the format that best suits the topic under consideration.

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In addition to research papers, the Journal welcomes critical/reflective commentaries on contemporary research, policy, theory or methods relevant to the Journal's readers. These articles reflect a viewpoint of the author and they may form part of an ongoing debate. These articles should contain 2,000-5,000 words. There is no preset organisational structure.

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Proposals are invited for special issues that fall within the remit of the journal. Ageing & Society especially looks for proposals that show originality and which address topical themes. Proposals which involve authors from a range of disciplines and/or countries are particularly encouraged and the special issue must demonstrate clear added value in advancing an understanding of ageing and later life that is more than the sum of the individual papers.

Proposals should be submitted by the co-ordinating Guest Editors by email to the Editor, Christina Victor: christina.victor@brunel.ac.uk

Proposals are reviewed twice a year, for further information see the guidelines for special issue proposals available here.

It is *Ageing & Society* practice that all papers in special issues are subject to blind peer review, undergoing the same refereeing process as all other submissions, led by the *Ageing & Society* Editor and co-ordinated by the journal's Editorial Assistant. The

final decision whether to publish individual papers submitted as part of a special issues remains with the Editor.

Submission requirements

Exclusive submission to *Ageing & Society*

- Submission of the article to Ageing & Society is taken to imply that it has not been published elsewhere nor is it being considered for publication elsewhere. Authors will be required to confirm on submission of their article that the manuscript has been submitted solely to this journal and is not published, in press, or submitted elsewhere. Where the submitted manuscript is based on a working paper (or similar draft document published online), the working paper should be acknowledged and the author should include a statement with the submitted manuscript explaining how it differs from the working paper. Articles which are identical to a working paper or similar draft document published online will not be accepted for publication in *Ageing & Society*.

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- All submissions must fall within the remit of the journal, as described at the beginning of this document.
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- The stereotypical presentation of individuals or social groupings, including the use of ageist language, must be avoided.

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All submissions should include:

- A copy of the complete text of the manuscript, with a title page including the title of the article and the author(s)' names, affiliations and postal and email addresses.
- A copy of the complete text minus the title page, acknowledgements, and any running headers of author names, to allow blinded review.

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Peer-review process

- The corresponding author should prepare (a) a complete text and (b) complete text minus the title page, acknowledgements, and any running headers of author names, to allow blinded review. References to previous papers of the authors must not be blinded, neither in the text nor in the list of references.
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Ethical considerations

- Where the paper reports original research, confirmation must be given that ethical guidelines have been met, including adherence to the legal requirements of the study country. For empirical work conducted with human subjects authors must provide evidence that the study was subject to the appropriate level of ethical review (e.g. university, hospital etc.) or provide a statement indicating that it was not required. Authors must state the full name of the body providing the favourable ethical review and reference number as appropriate.

Declaration of funding

- A declaration of sources of funding must be provided if appropriate. Authors must state the full official name of the funding body and grant numbers specified. Authors must specify what role, if any, their financial sponsors played in the

design, execution, analysis and interpretation of data, or writing of the study. If they played no role this should be stated.

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Most research articles usually have the following sections in sequence: Title page, Abstract (200-300 words), Keywords (three to eight), Main text, Statement of ethical approval as appropriate, Statement of funding, Declaration of contribution of authors, Statement of conflict of interest, Acknowledgements, Notes, References, Correspondence address for corresponding author.

The title page should give the title of the article and the author(s)' names, affiliations and postal and email addresses. When composing the title of your article, please give consideration to how the title would be shortened to appear as a running head in final version of the Journal.

The tables and figures should be presented one to a page in sequence at the end of the paper. Black and white photographs may be submitted where they are integral to the content of the paper. Charges apply for all colour figures that appear in the print version of the Journal (see below for further details).

Authors are asked to follow the current style conventions as closely as possible. Please consult a very recent issue of the journal. In particular, please note the following:

- Use the British variants of English-language spelling, so ‘ageing’, not ‘aging’.
- **First level headers are in bold, sentence case and left justified**
- *Second level headers are in italic (not bold), sentence case and left justified*
- Do not number paragraphs or sections. Avoid very short (particularly one sentence) paragraphs.
- Do not use **bold text** in the text at all. For emphasis, use italic.
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Cole, T. 1992. *The Journey of Life: A Cultural History of Aging in America.* Cambridge University Press, Cambridge.

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Ruth, J.-E. and Oberg, P. 1996. Ways of life: old age in life history perspective. In Birren, J.E., Kenyon, G., Ruth, J.-E., Schroots, J.F.F. and Svensson, T.(eds), *Aging and Biography: Explorations in Adult Development.*. Springer, New York, 167-86.

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Last updated 14 August 2018

Chapter Two: Bridging Chapter

Word count: 715

Chapter Two: Bridging Chapter

Population ageing has become one of the defining problems of this century. The issue features on the agendas of global organisations such as the G8 conferences and the North Atlantic Treaty Organization (NATO) summits (International Labour Organisation, 2019). With the continued development of life-saving and life-lengthening treatments for physical health, life expectancy looks set to continue increasing and the issue of maintaining well-being in later life becomes increasingly more important. Loneliness has long been considered a well-being factor closely associated with old age. The Pew Survey 'Growing Old in America' (2009) reported that 29% of 18 to 64-year-olds expected loneliness to be a part of old age, compared to 17% of those aged over 65 years (Pew Research Center, 2009). The issue of loneliness amongst younger populations is receiving increasing public and political attention. In the last year the United Kingdom has seen the appointment of the world's first Minister for Loneliness, Tracy Crouch and the Prime Minister launched the Government's first loneliness strategy to tackle the public health issue of loneliness. Spending on strategies to reduce loneliness should be targeting those populations most at risk.

The systematic review addressed this question of prevalence, with results suggesting loneliness may be most prevalent amongst young adults, although remaining a problem for both. Importantly, the variability of the risk factors associated with loneliness in each of the sub-populations suggests the young and old may experience loneliness differently and for different reasons. The review raises the question as to whether difficulties with age-related transitions in young adulthood may be contributing to loneliness, much like age-related changes and losses have been linked to loneliness for older adults (Lasgaard et al. 2016; Nicolaisen & Thorsen, 2014). Failure to achieve

transitions “on time” has also been associated with loneliness in later life. Zoutewelle-Terovan and Liefbroer (2017) found older adults who had entered a partner relationship or parenthood relatively late were lonelier than those who had achieved these transitions “on-time”. The consequences for loneliness were most severe for those not achieving these developmental stages at all. If successful and timely age-related transitions have implications for well-being factors like loneliness in later life it seems important to know what young adults think about ageing. Consistent with this, Smith et al. (2017) were interested in whether maturity fears, described as fears of becoming an adult and facing the demands of adult life, are increasing amongst young adults. Employing a time-lag method, which examines people of the same age across different generations or time points, they found maturity fears increased significantly amongst undergraduate men and women between the period of 1982– 2012.

Ageing is an individual, complex and multidimensional experience. If loneliness is thought to be a psycho-social indicator of wellbeing in later life yet is being experienced as a problem in young adulthood, it may have implications for young people’s attitudes about ageing and expectations of old age. Negative attitudes to ageing have been linked to poorer social, psychological and physical health outcomes in later life (Bryant et al., 2012; Levy, Slade, Kunkel, & Kasl, 2002; Shenkin et al., 2014; Palacios et al., 2015). Little is currently known about the relationship between young adults’ attitudes to ageing and other psychological, social and physical health indicators. The second part of this thesis portfolio is interested in developing a valid and reliable way of assessing young adults’ attitudes to ageing. Existing questionnaires assessing this concept are either outdated, psychometrically weak or unable to capture the multidimensionality of the concept. To better understand what young adults really think about ageing we need a way of measuring attitudes which can consider the

psychological, social and physical aspects of ageing and capture both negative and positive appraisals. The development and validation of such a tool would allow for further research into relationships between attitudes to ageing and other well-being factors in young adulthood with implications for later life well-being. The paper starts by introducing the concept of attitudes to ageing and why it is relevant in the field of physical and mental health. The lack of a suitable assessment tool to reliably access these attitudes in young adults is discussed, leading to the rationale for the utility of a newly developed questionnaire to help to bridge this gap in our understanding and the evidence base.

Chapter Three: The Attitudes to Ageing Questionnaire for Young Adults (AAQ-Y): Development and Psychometric Properties

Prepared for submission to The International Journal and Ageing and Human Development (Appendix F & G)

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The Attitudes to Ageing Questionnaire for Young Adults (AAQ-Y): Development and Psychometric Properties

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Contributors: The first author joined the project team at the point of data collection for the clinical sample of young adults attending the youth mental health service. First author contributions involved the data collection of the clinical sample, data analysis, interpretation and write up of the manuscript. The AAQ-Y was developed by the third, fourth and fifth authors. Data collection of the sample of students attending the University of East Anglia was collected by the fifth author. The second author contributed to interpreting the data, editing and proof reading the manuscript.

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Conflicts of interest: All authors disclose no conflicts of interest.

Acknowledgements: Dr Jon Wilson

Abstract

The Attitudes to Ageing Questionnaire (AAQ: Laidlaw et al., 2007) is a widely used standardised measure of ageing attitudes and stereotypes developed for use with older adults. The current study aimed to develop a modified version of the AAQ for use with young adults, the Attitudes to Ageing Questionnaire for Young Adults (AAQ-Y) and establish its psychometric properties. Confirmatory factor analysis (CFA) suggested a poor fit to the three-factor structure derived from the original AAQ. Exploratory factor analysis proposed an alternative three-factor structure using data collected from 162 young adults. Reliability analysis revealed poor internal consistency and inadequate fit indices when tested under CFA. We propose methodological limitations and the issue of conjecture as possible explanations as to why the AAQ-Y, in its current format, is not a valid or reliable tool to assess young adults' attitudes to ageing. Recommendations are made as to how the measure could be improved and an alternative approach to assessing the attitudes of young adults to ageing is proposed. Secondary analysis explored ageing attitudes of young adults with and without current psychological distress using measures of ageism and ageing anxiety. Results revealed significant differences between these two groups, the impact of psychological distress on attitudes to ageing and health-related behaviours is considered. Future research should consider adopting a stage of ageing perspective when accessing attitudes to ageing, taking into consideration age-related transitions already experienced and their impact on future projections of ageing and later life. The relationship between attitudes to ageing and risky or health-compromising behaviours in young adults, particularly in the context of poor psychological health, warrants further research.

Key words: Ageing, attitudes, stereotypes, young adults

Introduction

In the context of ageing populations and increasing numbers living longer in later life, attitudes to ageing have never been more relevant. The proportion of older people relative to the rest of the population has increased considerably. In 1950 9.2% of the world's population was at least 60 years old, rising to 11.7% in 2013 and projected to reach 21.1% in 2050 (Marquet et al., 2016). Attitudes to ageing include stereotypical beliefs about older people and the processes of ageing that affect a wide range of behaviours, with implications for physical and mental health. In Western societies ageing is most saliently associated with physical and cognitive decline (Robertson, King-Kallimanis & Kenny, 2016). Research shows that an individual's attitude to ageing can be an important determinant of longevity and quality of life (Levy, Slade, Kunkel, & Kasl, 2002). The likelihood of engaging in preventative health behaviours such as smoking cessation, medical screening and exercise has been linked to attitudes to ageing (Mosley, Hall, Forlini, & Carter, 2014). Such attitudes play an important role in the earlier detection and treatment of risks associated with ageing. For example, negative attitudes to ageing (such as, "health problems are inevitable in old age", "old age is a depressing time of life") can reduce the likelihood of older people engaging in health promoting behaviours or seeking treatment for emotional difficulties (Laidlaw, 2010). Positive attitudes to ageing have been associated with lower levels of depression (Chachamovich, Fleck, Trentini, Laidlaw, & Power, 2008; Janecková, Dragomirecká, Holmerová, & Vaňková, 2013; Shenkin, Laidlaw, Allerhand, Mead, Starr, & Deary, 2014), reduced anxiety (Bryant, Bei, Gilson, Komiti, Jackson, & Judd, 2012; Shenkin et al., 2014), better physical health (Bryant et al., 2012; Shenkin et al., 2014), greater satisfaction with life (Bryant et al., 2012) and an increased likelihood of engaging in community activities (Palacios, Pedrero-Chamizo, Palacios, Maroto-Sanchez, Aznar, & Gonzalez-Gross, 2015).

Despite evidence that people are living healthier in later life, research consistently finds young adults hold negative attitudes to ageing and negative ageing stereotypes (Abramson, 2006; Kite, Stockdale, Whitley, Bernard E, & Johnson, 2005; Kropf, Cummings, & Deweaver, 2000). With ageing commonly associated with inevitable physical and psychological decline, thoughts of ageing can lead to feelings of fear and anxiety (McConatha, Hayta, Rieser-Danner, McConatha, & Polat, 2004). Lasher and Faulkender (1993) defined ageing anxiety as ‘‘combined concern and anticipation of losses centred around the ageing process”. Using a student population to investigate ageing anxiety and ageism in young people, Allan and Johnson (2008) found that young people who were anxious about their own future ageing tended to attribute to older people the negative stereotypes they feared would describe their future selves. In this respect young adults may be at increased risk of promoting ageist attitudes and behaviours because of their own projected fear and anxiety. Hepworth (1995) describes a process by which the prevalence of ageism in society accelerates ageing consciousness in younger populations and leads to increasing feelings of anxiety and fear around the ageing process. Ageism can have detrimental implications across the lifespan, feelings of fear and anxiety in anticipation of later life and experiences of prejudice and discrimination when reaching later life (Cummings, Davies & Campbell, 2000).

Stereotype Embodiment Theory (Levy, 2009) suggests negative attitudes to ageing are internalised from a very young age and reinforced across the life course, becoming negative self-stereotypes and influencing the individual’s psychological, behavioural and physiological functioning. Negative self-stereotypes can operate outside the individual's awareness with damaging effects. Levy (2009) demonstrated, in a series of experiments using subliminal priming techniques, that negative age stereotypes had detrimental effects on cognition and physical functioning; impacting memory performance, motor skills, cardio vascular stress, walking speed and gait.

Conversely, the study showed positive age stereotypes could also be internalised and were found to increase cognitive performance on the priming tasks. Similar findings by Levy, Zonderman, Slade and Ferrucci (2009) demonstrated participants under 49 years of age with negative age stereotypes were significantly more likely to experience a cardiovascular event in the following 38 years when compared to those with more positive stereotypes. Even given the small effect sizes observed in these studies, these empirical findings highlight the relevance beliefs about ageing held by younger cohorts can have on their own health outcomes and well-being in later life.

It is important to understand beliefs and expectations about ageing across the lifespan to minimise the risks associated with ageism and age stereotypes and to enhance the quality of life for older people. Attitudes to ageing are complex and multidimensional. Stein (1995) identified 34 different fears of ageing in a sample of 509 participants. Brunton and Scott (2015) discuss the need to utilise multidimensional measures when assessing ageing anxiety due to the complexity and broadness of the construct. The Ageing Opinion Survey (Kafer, Rakowski, Lachman & Hickey, 1980) was developed as an instrument to assess the multidimensional nature of attitudes towards ageing and the elderly. The scale's validity has been criticised due to low inter-item correlations and inadequate factor loadings (Yan, Silverstein, & Wilber, 2011). The Ageing Semantic Differential (ASD; Rosencranz & McNevin,1969) was also designed to measure ageing attitudes and negative stereotypes however attempts to replicate the original three-factor structure have since failed (Gekoski, Knox, & Kelly, 1991). The researchers concluded by highlighting the need for the development of a more reliable tool to measure ageing attitudes and stereotypes.

Laidlaw, Power, Schmidt, & the WHOQOL-OLD Group (2007) addressed this need by developing the Attitudes to Ageing Questionnaire (AAQ). Scale development involved 5,500 older adults in 20 countries worldwide. Items for the AAQ were selected following debates amongst

international experts (Delphi exercise) and via focus groups with older adults themselves. The scale consists of three distinct domains; Psychosocial Loss (assessing perceived negative attitudes to ageing involving psychological and social loss), Physical Change (focusing on health and the experience of ageing itself) and Psychological Growth (identifying positive factors, recognising lifespan development and wisdom attainment). Furthermore, the AAQ provides a means to examine an individual's perspective on ageing from two different standpoints, by using both general and personal items, offering a more nuanced and idiosyncratic perspective on ageing. The AAQ provides a flexible and comprehensive way to measure older people's attitudes towards their own ageing, it is multidimensional in nature and applicable in cross-cultural settings (Marquet et al., 2016). The AAQ has been subject to validation studies (Laidlaw et al., 2007; Chachamovich et al., 2008; Kalfoss, Low, & Molzahn, 2010; Shenkin, Watson, Laidlaw, Starr, & Deary, 2014) and demonstrated good psychometric properties.

Research utilising the AAQ has uncovered important insights into the relationship between attitudes to ageing and psychological health in older adult populations (Laidlaw, Kishita, Shenkin, & Power, 2018). Positive attitudes on the Psychosocial Loss, Physical Change, and Psychological Growth subscales have been associated with lower levels of depression (Chachamovich et al., 2008; Kalfoss et al., 2010) anxiety (Shenkin et al., 2014) and greater quality of life (Top, Eriş, & Kabalcıog, 2012). Depression has been found to predict negative attitudes towards ageing and poorer quality of life in older adult populations (Chachamovich et al., 2008), with factors such as age, gender and educational level having little impact. Older adult research tells us attitudes to ageing can become symptom-contaminated in the presence of psychological distress. Negative or distorted cognitions may be misattributed as an expectation of ageing rather than symptomatic of an underlying psychological difficulty. Such misattributions could have significant clinical implications

in terms of treatment seeking, adherence and outcomes for older adults. Little is currently understood about the attitudes and expectations of ageing of young adults suffering from mental health difficulties. It seems important to know if attitudes are symptom-contaminated in the context of psychological distress, in a similar way to those of older adults, to consider the potential implications on health-related behaviours and treatment outcomes for younger populations (for example, identifying and working towards goals, engagement in risky or impulsive behaviours). In a study involving 408 young adults, Popham, Kennison and Bradley (2011) found those reporting more negative attitudes to ageing and more ageist behaviours engaged in more risk-taking behaviours (such as drug abuse, alcohol consumption, tobacco use and risky sexual behaviours) compared to those reporting less negative attitudes and behaviours. Furthermore, the authors predict that in populations where risky behaviour occurs more frequently the relationship may be even more salient, with implications for physical and mental health.

In this regard, one theoretical framework proposed to understand risk-taking behaviours in young adults is Terror Management Theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986). TMT depicts the fear of mortality as a key aspect of human psychology (Popham et al., 2011b). TMT proposes young adults engage in risky behaviours because it makes them feel strong and invulnerable and serves as a buffer against fears of their own mortality. Within the area of mental health, risky and health compromising behaviours are particularly common (Webb, Kauer, Ozer, Haller, & Sanci, 2016). Depression is linked with drug and alcohol misuse (Ramirez & Badger, 2014; Whittle et al., 2015), risky sexual behaviour (Kosunen, Kaltiala-Heino, Rimpelä, & Laippala, 2003) and deliberate self-harm (Flett et al., 2012). In a sample of 395 veterans receiving outpatient mental health care, Strom et al., (2012) found post-traumatic stress disorder symptoms were

associated with elevated rates of substance use, thrill seeking, aggression, risky sexual practices and firearm possession.

An alternative to TMT in understanding young people's risk taking behaviours comes from neurological and brain development research. Molecular imaging and functional genomics studies have demonstrated that the brain remains in an active state of development during the adolescent years (considered ages 10 – 24 years) (Arain et al., 2013). Neural circuitry in the frontal lobe region of the brain, responsible for executive functions, the self and social cognition, continues to undergo major reorganisation during this time (Dayan, Bernard, Olliac, Mailhes, & Kermarrec, 2010). Changes occurring in the limbic system can impact upon self-control, decision making, emotion regulation, and the perception and evaluation of risk and reward (Dayan et al., 2010). These ongoing brain maturation processes could also, at least in part, account for the higher prevalence of health-compromising and risky behaviours in this population.

Risk-taking in young adulthood has individual implications in terms of mortality and later life health, but also incurs a cost to society, making it an important public health issue (Popham, Kennison, & Bradley, 2011a). Promoting more positive expectations of later life and attitudes to ageing may help to reduce risky and health compromising behaviours by fostering a desire to take better care of the physical body in order successfully achieve old age. Existing research tells us better knowledge of ageing and more frequent contact with older people is one way of improving student's attitudes to ageing (Allan & Johnson, 2008). Finding new and innovative ways to promote positive attitudes and expectations will be important when trying to shift embedded stereotypes. Being able to accurately access young adults' attitudes to ageing from a comprehensive, multidimensional perspective will be helpful to assist in developing more age-positive interventions.

The aim of the current study was to evaluate the psychometric properties and factor structure of a newly developed questionnaire to assess young adult's attitudes to ageing (AAQ-Y) modelled on the well-established AAQ. The study aimed to establish whether the three domains of ageing (psychosocial loss, physical change, psychological growth) identified in the original scale translated well when used with young adults, confirming the underlying theoretical structure of the scale. The development and validation of the AAQ-Y would provide an easily administered, reliable tool to explore and understand individual and collective beliefs about ageing across different life stages. A further objective was to establish whether the AAQ-Y could be used to better understand relationships between attitudes to ageing and psychological well-being in young adults. In the absence of an existing evidence base we sought to address the question as to whether attitudes to ageing are influenced by current psychiatric symptoms. Evidence suggests in psychological disorders such as depression and anxiety there is an overrepresentation of possible negative future events and in depression specifically, a reduction in the generation of possible positive future events (Macleod & Holloway, 2016; Roepke & Seligman, 2016). Based on empirical findings from older adult research and cognitive theories supporting negative and threat-based biases in future thinking (Beck, 1967; Beck 1983; Clark & Beck, 2010), we hypothesised that young adults currently experiencing symptoms of psychological distress would endorse more negative attitudes to ageing on the AAQ-Y.

Method

Participants and procedure

The study received ethical approval from the NHS Research Ethics Committee (Appendix A) and was sponsored by the University of East Anglia. The total study sample consisted of 162 young adults between the ages of 18 – 40 years, this consisted of two subsamples.

Student sample

One hundred and thirty-two students attending the University of East Anglia (UEA) were recruited into the study. Participants were self-selected and responded to advertisements to take part in an online survey about ageing. Inclusion criteria required participants to be between the ages of 18 – 40 years, currently enrolled as an undergraduate or postgraduate student at UEA and have sufficient knowledge of English to provide informed consent and answer the study questionnaires. The study was advertised using the university's notice boards and an advertisement for the research was sent to the university mailing list via the University Student Bulletin. A link to take part in a web survey was available within the study advertisements. The online survey employed an interactive website hosted by Survey Monkey.

Clinical sample

Thirty participants were recruited from a local youth mental health service, receiving treatment for affective disorders and psychological distress. Inclusion criteria required; between 18 – 40 years of age, currently receiving care from the youth mental health service and sufficient knowledge of English to provide informed consent and answer the study questionnaires. Participants were excluded if they were deemed by a clinician at the service to be acutely psychotic, actively suicidal or receiving treatment for substance misuse. The clinical sample was primarily collected via a face to face recruitment strategy after attempts to recruit via the online survey method were unsuccessful. Participants attended a face-to-face appointment with the Chief Investigator providing informed consent and completing the questionnaire battery. Three participants from the clinical group requested the consent forms and questionnaires be sent to them and returned via postal methods.

AAQ-Y development and psychometric properties

All participants (*n* = 162) completed the AAQ-Y as part of the questionnaire battery (Appendix B). The other measures, described below, were administered to allow for an evaluation of concurrent validity and the impact of mental health symptoms on attitudes to ageing.

Measures

Attitudes to Ageing Questionnaire for Young Adults (AAQ-Y):

Questionnaire items for the AAQ-Y were developed using the items from the original AAQ (Laidlaw et al., 2007; Laidlaw et al., 2017). The AAQ consists of three subscales representing three distinct domains: psychosocial loss, physical change, and psychological growth. Items are scored on a five-point scale (i.e. strongly disagree/ disagree/ uncertain/ agree/ strongly agree). Each item was reworded to assess younger adults' attitudes towards older people and ageing. The rewording kept the same format as the original AAQ but substituted the personal nature of the question about experience to that of opinion and attitude. A consultation process followed, the items from the original AAQ and the AAQ-Y were reviewed by a panel of healthcare professionals working with either young or older adults (3 x Assistant Psychologists, 3 x Clinical Psychologists, 1 x Consultant Psychiatrist). The panel also included three young adults' representative of the target population; undergraduate students from UEA and three young people from the Inspire youth panel.
The Inspire youth panel is made up of young people with an interest in or with experience of accessing youth mental health services. Disagreements regarding the rewording of the items were discussed within the research team and items adjusted until agreement achieved.

Fraboni Scale of Ageism (FSA; Fraboni, Saltstone, & Hughes, 1990): The FSA is a standardised self-report questionnaire that measures the affective component of ageist attitudes. The FSA measures three factors of ageism (antilocution, avoidance, and discrimination). It consists of 29

items that are scored on a four-point scale (i.e. strongly agree/ agree/ disagree/ strongly disagree) and takes around five minutes to complete. There is a maximum score of 145 and higher scores indicate higher levels of ageism. The FSA has been found to have adequate construct validity and high internal reliability (Fraboni et al., 1990) in a sample of 16 – 65 year-olds.

Anxiety about Ageing Scale (AAS; Lasher & Faulkender, 1993): The AAS is a standardised self-report questionnaire that measures overall anxiety about ageing across the lifespan. The AAS measures four factors regarding anxiety about ageing (fear of old people, psychological concerns, physical appearance and fear of losses). It consists of 20 items scored on a five-point Likert scale and takes approximately five minutes to complete. Lower scores indicate higher levels of anxiety about ageing. The scale was validated in a sample of 20 – 97 year-olds and demonstrated good reliability and validity, Cronbach's alpha for each of the subscales ranges from .69 - .78 (Lasher & Faulkender, 1993).

*Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001)***.** The PHQ-9 is a standardised self-report questionnaire routinely used in clinical practice to measure the intensity of depression symptoms in clinical and non-clinical patients. It consists of nine items that are scored on a four-point Likert scale to indicate how often certain problems bother the individual. The PHQ-9 takes around three minutes to complete. The sum of scores of individual items can indicate depression severity of none/minimal (<4), mild (5-9), moderate (10-14), moderately severe (15-19) and severe (20-27). The PHQ-9 is proven to be a reliable and valid measure of depression severity (Kroenke et al., 2001).

Generalised Anxiety Disorder Scale (GAD-7; Spitzer, Kroenke, Williams, & Lowe, 2006). The GAD-7 is a standardised self-report questionnaire routinely used in clinical practice to measure

the severity of generalised anxiety disorder symptoms. It consists of seven items that are scored from 0 to 3. The GAD-7 takes around three minutes to complete. The sum of scores can indicate anxiety severity of mild (5-9), moderate (10-14) and severe (15-21). The scale has good reliability, as well as criterion, construct, factorial, and procedural validity (Spitzer et al., 2006).

The questionnaire battery also included a demographic questionnaire, four questions assessing quality of life and five supplementary questions (Appendix B). These questions have been used in previous studies to measure experience related to ageing amongst young adults (Allan, Johnson & Emerson, 2014; Duthie & Donaghy, 2009; Nochajski, Waldrop, Davis, Fabiano, & Goldberg, 2009) and were included to allow for the consideration of this variable in relation to the study findings.

Overview of data analysis

Confirmatory factor analysis (CFA) was performed on the full dataset (n = 162) to test the factor structure hypothesised from the original AAQ using the open statistical software package Jamovi version 0.9. A covariance matrix using the specified factor structure was produced. Factor structure is considered acceptable when only small discrepancies exist between the actual and the estimated matrix (Intrieri, Von Eye, & Kelly, 1995). No universal agreement exists on what is reported in CFA however generally ‘goodness of fit’ can be reliably established using the chi-square statistic and values of comparative fit index (CFI), root mean square error of approximation (RMSEA) and the Tucker-Lewis index (TLI) (Hu & Bentler, 1998). In a model of good fit, the chi-square statistic should be non-significant (with values closer to zero demonstrating better fit), indicating a minimal difference between the observed and expected covariance matrices. As a lone indicator of model adequacy, the chi-square statistic is problematic due to its sensitivity to sample and model size, increasing the likelihood of type I and type II errors. The CFI (Bentler, 1990) is

considered a much more robust indicator and is based on the noncentrality parameter of the chi-square and goodness-of-fit statistics (Intrieri et al. 1995). CFI values range from 0-1.0 with values closer to 1.0 indicating a better-fitting model. A CFI of less than 0.9 suggests the model could be substantially improved. The RMSEA (Steiger, 1990) provides a measure of discrepancy per degree of freedom of the model (Intrieri et al. 1995). A value of 0 reflects a perfect fitting model with values up to 0.08 considered an acceptable fit (Browne & Cudek, 1993). The TLI is a commonly used goodness of fit indicator as it's relatively independent of sample size (Marsh, Balla, & McDonald, 1988). TFI values over 0.90 are considered acceptable (Hu & Bentler, 1999). The scales internal consistency was evaluated using Cronbach's coefficients for each subscale, with values of 0.7 considered acceptable (DeVellis, 2011).

A sensitivity analysis was performed to explore the robustness of the primary analysis by examining the performance of the model under alternate scenarios. To explore influences of sample characteristics on model fit, CFA was performed on the student only data after removing the clinical sample (n = 132), imposing the factor structure from the original AAQ. A further CFA was conducted on a subset of the student data after the removal of participants scoring in the 'severe' range for anxiety or depression (n = 122). Exploratory factor analysis (EFA) was also performed using IBM Statistics SPSS 25 on the full dataset (n = 162) and the student only dataset with 'severe' clinical outliers removed (n = 122) to explore the emerging factor structures. Prior to performing the EFA the Kaiser-Meyer-Olkin statistic (KMO), a test for sampling adequacy, and Bartlett's test of sphericity, a test of the suitability of the correlation matrix to EFA, were estimated. An oblique rotation (promax) was used to allow for intercorrelations between factors. Cattell (1978) argues when conducting factor analysis for psychological phenomena it is unlikely, *a priori*, that factors would be uncorrelated, so oblique rotations should be employed. The maximum likelihood

extraction method was selected based on recommendations of its robust performance in a variety of situations (Kline, 2005). Identification of subscales was based on factor loadings ≥ 0.3 (Hair, Black, Babin, & Anderson, 2010). Reliability analysis and CFA was performed on the factor solutions produced by the EFA.

Secondary analysis

To inform theoretical interpretations of the primary analyses, response frequencies for individual items on the AAQ-Y were calculated (Table 3, Appendix D). To test the hypothesis that young adults currently experiencing psychological distress would endorse more negative ageing attitudes independent samples t-tests were performed using data from the clinical sample (n = 30) and a sub-sample of the UEA student population (n = 30) who scored in the 'minimal' range for depression and anxiety, based on scores from the GAD-7 and PHQ-9. Scores between 0 – 4 are considered minimal. The sample size for the clinical group was determined using Cohen's (1992) matrix with an alpha level of 0.05 and power of 0.8. An effect size of 0.8 was used based on previous research exploring differences in scores on the original AAQ between clinical and non-clinical samples of older adults (Chachamovich et al. 2008). To detect a large difference between two independent groups requires n = 26 (Cohen, 1992), therefore the obtained sample size of 30 in this study was adequate to allow for between-group comparisons.

Results

Sample characteristics

Participants were aged between 18 years to 40 years, the mean age was 24.3. 24.1% were male and 75.3% female. A large majority of participants were of white origin (81.5%) and highly educated (45.7% held or were currently studying for a PhD or doctorate and 35.8% held or were

currently studying for an undergraduate degree). 28.4% of participants had completed a placement involving the care of older people and 40.1% had received teaching on ageing. The majority (74.7%) of the sample reported having regular contact with older people, however only 30.9% reported more than weekly contact. Measures of depression (PHQ-9) and anxiety (GAD-7) revealed a large portion of the sample where experiencing some level of psychological distress, with only 38.3% and 32.7 % scoring in the minimal range for depression and anxiety respectively. Full sample characteristics can be found in Table 1 (Appendix C).

Confirmatory factor analysis and sensitivity analysis

Examination of the fit indices revealed the 24-item, three-factor model based on the factor structure of the AAQ to be a poor fit for the data (Table 3, Model 1.). Model fit indices failed to meet specified requirements ($\chi^2(249) = 488$, CFI = 0.65, RMSEA = 0.08, TLI = 0.61). Reliability analysis of Cronbach's coefficients for the individual subscales also suggested poor internal consistency for the Physical Change ($\alpha = 0.53$) and Psychological Growth ($\alpha = 0.66$) subscales. The Psychosocial Loss scale performed adequately ($\alpha = 0.76$).

Current psychiatric symptoms were hypothesised *a priori* to influence attitudes to ageing. To explore the performance of the model under different theoretical conditions the data collected from participants attending the youth mental health service ($n = 30$) was extracted and model fit re-analysed using CFA. Fit indices revealed minimal model improvement (Model 2). Analysis of the sample characteristics revealed 5.3% of the student sample were reporting symptoms of anxiety and 3% symptoms of depression in the 'severe' range. To further consider the influence of psychiatric symptoms, the data for the 'severe' scoring participants was removed from the student sample and

CFA re-run (Table 2, Model 3.). Some improvement on model fit was achieved, with the CFI increasing to 0.66, however it remained a poor representation of the underlying factor structure.

Exploratory factor analysis was employed to explore the emerging factor structure based on inter-variable correlations without predetermined restraint. EFA was performed on the full dataset and the student only data excluding those scoring in the severe range for psychiatric symptoms. The KMO and Bartlett test showed sampling adequacy and an underlying structure to the data, with values greater than 0.6 considered good (Marquet et al., 2016). Examination of the scree plots (Figures 1 and 2, Appendix E) suggested a three-factor structure explaining 36.6% of the total variance when using the full data set (*n* = 162) and 37.4% of the total variance when using the student only dataset with the severe clinical scores removed (*n* = 122). CFA was performed imposing the factor structures from the EFA. Five items (items 7, 9, 13, 16, 18) were removed from Model 4 due to poor factor loadings (< 0.3). Model 5 produced the best model fit indices (CFI = 0.72, RMSEA = 0.07, TLI = 0.75) yet still failed to meet acceptability, with reliability analysis revealing poor internal consistency for all three subscales (α = 0.55, α = 0.58, α = 0.66).

Table 2. Three Factor Models and Indices of Model Fit tested in Confirmatory Factor Analysis

Model	χ^2	df	p	CFI	TLI	RMSEA
1. Three Factor AAQ (*N* = 162)	488	249	<.001	0.649	0.611	0.077
2. Three Factor AAQ (*N* = 132)	436	249	<.001	0.635	0.596	0.081
3. Three Factor AAQ (*N* = 122)	435	249	<.001	0.655	0.617	0.078
4. Three Factor based on EFA (*N* = 162)	414	249	<.001	0.627	0.572	0.924
5. Three Factor based on EFA (*N* = 122)	345	227	<.001	0.772	0.746	0.065

Secondary analysis

Individual item analysis revealed a high frequency of 'Uncertain' responses. Twenty-nine per cent of the items received 'Uncertain' as the most frequently endorsed response. Three items were

from the Psychosocial Loss subscale, three items from the Physical Change subscale and one from the Psychological Growth subscale (see Table 3, Appendix D).

Due to the poor model fit of the AAQ-Y to the three-factor structure of the original AAQ it was not possible to test the hypothesis that young adults attending the mental health service with current psychological distress would endorse more negative attitudes to ageing on the AAQ-Y. Instead, the hypothesis was explored by analysing data collected about ageism and ageing anxiety using the Fraboni Scale of Ageism and the Anxiety about Ageing Scale. *t*-tests showed significant differences on both the FSA ($t(58) = -3.43$, $p = .001$) and AAS ($t(58) = 3.50$, $p = .001$) between the clinical and non-clinical groups, with the clinical group appearing to display more ageism and ageing anxiety.

Discussion

The aim of the current study was to evaluate the psychometric properties and factor structure of a newly developed questionnaire to assess young adults' attitudes to ageing, the Attitudes to Ageing Questionnaire for Young Adults (AAQ-Y). Of primary interest was whether the three domains of ageing (psychosocial loss, physical change, psychological growth) identified in the original AAQ remained an accurate and meaningful reflection of the theoretical constructs underlying young adults' attitudes to ageing. The results of the confirmatory factor analysis revealed the AAQ-Y did not perform well in its current format with the population of young adults included in this study. Assessment of a range of fit indices revealed a poor fit with the three-factor model based on the original AAQ factor structure. The internal consistency of the three subscales also proved to be weak. Inadequate psychometric properties remained when tested under alternate conditions. Sensitivity analysis including exploratory factor analysis on different profiles of the data revealed

only 36.6% – 37.4% of the total variance could be explained by the three-factor solution. Taken together these findings suggest the AAQ-Y in its current form is not a reliable tool to assess young adults' attitudes to ageing.

The results raise some interesting questions around why the measure did not translate well with this population. We propose two hypotheses to understand this. The first, related to methodological limitations around the sample collected and the questionnaire items used, and the second related to the theoretical problem of conjecture and the issue of experience. Considering these findings, we propose a novel direction for future attitudes to ageing research and the development of a reliable measure for use with young adults.

Methodological factors potentially contributing to poor factor structure

Methodological factors which may explain the psychometric inadequacy of the AAQ-Y include a small sample size, the sample characteristics and individual item development. The sample used to validate the scale was small for factor analysis. Pearson and Mundfrom (2010) propose a sample size of 100 is sufficient to achieve a good level of agreement for a three-factor model with at least twenty-four items and high communalities. As the AAQ-Y was a new assessment tool information from the original AAQ was used to consider these requirements. The 24-item three-factor model of the AAQ had high communalities however the exploratory factor analysis using the young adult data revealed some low communalities (with scores ranging from .12 to .63), indicating that some items did not correlate well with one another. This is problematic when considering the appropriateness of the sample size based on Pearson and Mundform's recommendations and may explain why some items failed to load significantly onto any factors. There is variation in the literature around sample size recommendations. Some say that confirmatory factor analysis favours

larger datasets, with Kline (2005) recommending a dataset of 500 for a reliable CFA. Although not reaching those requirements, the sample size in the current study was reasonable for a factor analysis and comparable to other published studies of scale development (see Wells & Cartwright, 2004; Mraity, England & Hogg, 2014). That being said, the small sample size collected in the current study is likely to have impacted upon the adequacy of the model and the likelihood of confirming a clear factor structure. Scale development research is most robust when large datasets are used (DeVellis, 2011), the small sample collected for validation of the AAQ-Y remains a limitation of this research.

More generally, analysis of the sample characteristics revealed a biased sample which was unrepresentative of the population the scale was to be developed for. The study sample was predominantly white (82%) and female (75%) and consisted largely of undergraduate or postgraduate students (81%), with approximately 85% of the total sample having pursued some form of higher education. It is quite possible the duration and level of education had an impact on the attitude data. The sample profile revealed approximately 28% had completed a placement involving the care of older people and 40% had received teaching on ageing. Previous research found greater knowledge about ageing, better quality contact and increased frequency of contact with older adults is related to less ageing anxiety and reduced ageist attitudes (Allan & Johnson, 2008; Hale, 1998). On the other hand, university can also represent a challenging developmental milestone for many young adults which could influence their attitudes towards later transitions. Smith et al. (2017) found university students were increasingly anxious about the transition to adult life and held more negative attitudes towards ageing. Compared to the original validation sample for the AAQ therefore, the current sample is likely to be more educated, have received specific teaching on ageing, have a higher representation of women to men and lack ethnic diversity. Due to cohort effects matching a sample on characteristics will always be problematic as factors such as education attainment would be

expected to vary between cohorts. This highlights the nuanced question as to what findings are related to sample specific characteristics and what is a result of youth and life stage implications. The failure to replicate the factor structure in the young adult dataset may just be evidence that the experience of ageing is very different within these different age stages.

The possible impact of conjecture and experience on findings

The rewording of the AAQ-Y items for use with young adults may have impacted upon the integrity of the underlying constructs established in the original questionnaire, accounting for the failure to replicate a similar factor structure in the new measure. The original AAQ was developed based on the core construct of experience. Although the questionnaire assessed two different standpoints, using both personal and general items, the subjective experience of ageing took precedence over more objective indictors. The rewording of the AAQ-Y resulted in all 24 items becoming general (for example, "I believe older people are more accepting of themselves as they grow older") and removed any personal or experiential elements. This methodological change required respondents to rely solely on conjecture to answer the questions. Our second hypothesis as to why the scale failed to translate well with young adults addresses this problem of conjecture.

It is possible that the rewording of the AAQ items, removing the experiential component and introducing conjecture, may have impacted upon the respondent's ability to answer the questionnaire meaningfully. The high frequency of 'Uncertain' responses to the AAQ-Y items may well suggest this. When the original AAQ was developed it was co-constructed with older adults to ensure that items were conceptually and experientially meaningful, reducing the likelihood of a high volume of uncertain responses. Although the current study involved a focus group with young adults to discuss the wording of items, the move away from items which assess attitudes towards one's own ageing is

likely to have changed the underlying constructs and may account for the poor translation of the original factor structure to the young adult data. Asking young people to comment on their attitudes towards older people and later life will always require some degree of conjecture as old age is not yet an experience they have encountered. By the time individuals reach young adulthood they are, however, experts of their own ageing experience and have negotiated several significant age-related transitions. Young adulthood is often seen as a time of preparation and education for adult life (Brunton & Scott, 2015), often involving a host of new challenges not previously encountered in adolescence. A negative attitude to ageing in young adulthood could have significant adverse effects on developmental transitions associated with ageing across the lifespan, such as the development of one's own identity, the capacity for intimate relationships and the achievement of financial independence (Galambos, Barker, & Tilton-Weaver 2003). Perhaps a more meaningful approach to understanding young adults' attitudes to ageing would be to assess personal experiences of ageing across the developmental stages already achieved, then consider how those experiences influence beliefs and expectations of future ageing and old age.

It would be our recommendation that the next phase in the development of the AAQ-Y be a return to the concept and structure of the original AAQ, focusing on personal experience and meaning-making about ageing relevant to young adults themselves. An AAQ-Y that assesses young adults' attitudes towards their own ageing made up of personal items which assess ageing experiences and future ageing expectations, as well as general items about old age (e.g. "I believe wisdom comes with age"), may create a more useful measure of individual experiences and a return to the original structure and objective of the AAQ. Further consideration may need to be given to the domains addressed in the original AAQ; psychosocial loss, physical change and psychological growth. Issues associated with these areas may well remain relevant for younger adults however they

might look quite different when considering the experiential perspective of a younger person. For example, items on the physical change domain around deterioration in physical health and mobility or energy may not be relatable for a younger population, whereas items addressing changes in physical appearance, sporting ability or the impact of behaviours such as smoking, drinking and drug taking on physical health may be more poignant. It would also be important to know what constitutes ‘ageing’ to young adults. The concept and criteria for ageing can take different forms for different people at different life stages. If we are asking young adults to comment on their attitudes towards ageing it seems critical to know what old age means to them. Research tells us that the age of the perceiver has a considerable impact on their perception of when old age occurs, with older adults tending to judge the onset of old age later in life than younger people (Davidovic et al., 2007). Musaiger & D’Souza (2009) reported participants aged 20-29 years considered 60-69 years as elderly, whereas participants over 50 years defined old age as 80 years and above.

Future research on the AAQ-Y would benefit from a return to the early development phase of the study, using focus groups made up of a large, representative samples of young adults to address and unpick these ideas around the domains of ageing and reconsider the overall objective of the measure. Being able to explore how personal experiences of ageing in earlier life can influence projections of future own-ageing and general ageing attitudes may further our understanding of how ageing experiences, ageing anxiety and negative age stereotypes in society shape our attitudes and expectations of ageing and later life. If young adults’ negative attitudes to ageing and ageing anxieties are related to their past experiences and fears or uncertainty around the next developmental transition, it has implications for how we address the problem of ageism and better support younger generations to transition into different life stages successfully with less anxiety.

AAQ-Y development and psychometric properties

To improve methodological rigour, researchers should aim to collect a much larger sample of young adults to allow for a more statistically robust analysis using advanced approaches in structural equation modelling. Researchers should seek to collect a more representative sample to develop and validate an AAQ-Y with greater ethnic, educational and socioeconomic diversity, and an even gender distribution. This would allow for a factor structure to emerge which more accurately reflects the wider population from which the sample was drawn. Researchers might benefit from using social media platforms to reach such populations. Recruitment to research using applications such as Facebook and Twitter is increasingly popular as "social networking site recruitment shows great potential to yield a demographically representative sample" (Fenner et al., 2012), with the potential to reach global populations who are both socio-economically and ethnically diverse (Casler, Bickel, & Hackett, 2013).

The secondary objective of the study was to test the hypothesis that young adults experiencing psychological distress would endorse more negative attitudes to ageing on the AAQ-Y. As the AAQ-Y did not display adequate psychometric properties it was not possible to directly address this. From looking at the other measures however it was evident that the young adults attending the youth service with current psychological distress displayed significantly higher scores for ageism and ageing anxiety than the sample of students without symptoms of distress. We sought to address the question as to whether attitudes to ageing become symptom contaminated in the presence of psychological distress, which these findings may lend support for, but without knowing the student's attitudes prior to becoming unwell it is not possible to know the true nature of this relationship based on the present findings. The link between negative attitudes to ageing and risky or health-compromising behaviours in young adults remains an interesting one which warrants further research. As young people with mental health difficulties have also been identified as a group at

increased risk of these behaviours, therapeutic interventions might benefit from incorporating psychoeducation around the realities of ageing, whilst exploring and challenging negative age-related cognitions. An attitudes to ageing questionnaire designed for young adults could facilitate this by providing a tool by which young people can consider and better understand their ageing attitudes and experiences. A validated AAQ-Y may also aid clinicians when formulating cases and thinking about how difficulties experienced at different age stages could be impacting upon future beliefs about ageing and the implications of that on current psychological symptoms. Older adult research using the AAQ revealed positive attitudes to ageing were associated with higher levels of satisfaction with life, better self-reported physical and mental health and lower levels of depression and anxiety (Bryant et al. 2012). Promoting the prospect of successful ageing and overcoming negative age stereotypes when working with young adults in clinical practice might help the individual to envisage a more positive and hopeful the future.

It should also be noted that there was a high frequency of anxiety and depressive symptoms reported across the non-clinical, student sample. This was higher than we had anticipated but perhaps not surprising in the context of research reporting the prevalence of mental health problems as increasing amongst university students and greater than in the general population (Bacigalupe, Esnaola, & Martín, 2016). Taking these factors together and considering Smith et al's. (2017) findings that undergraduates are increasingly anxious about the transition to adult life and have more negative attitudes to ageing, this seems like an important population to better understand and support. The relationship between attitudes to ageing, psychological health and risk-taking behaviours in young adults is currently under-researched and warrants further investigation.

Conclusions

The findings of the current study demonstrate that the AAQ-Y based on the items from the original AAQ cannot be used to accurately access young adults' attitudes to ageing. Further research is needed to develop a scale that is more appropriate to this population. Developing a valid measure may need to incorporate issues such as conjecture and previous experience of ageing, allowing for a more nuanced and idiosyncratic approach to the ageing attitudes of young adults to be considered. To date much of the empirical research around attitudes to ageing has focused on perceptions of elderly people and old age specifically. An interesting direction for future research might be to try and understand young adults' attitudes to ageing from a stage of ageing perspective, taking into consideration age-related transitions already experienced and their impact on future projections of ageing and later life. A modified version of the AAQ-Y could meet that need with items assessing ageing attitudes from a personal, experiential standpoint based on transitions already achieved, whilst also addressing more general ageing attitudes that commonly affect people across the entire developmental lifespan. Future research should also seek to better understand how attitudes to ageing may impact upon risk-taking and health-compromising behaviours, particularly in the context of poor psychological health, with the view to developing more effective education and intervention strategies.

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Health Research Authority

Appendix A
Ethics approval letter

South West - Central Bristol Research Ethics Committee

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18 September 2015

Dr Naoko Kishita
Senior Post-Doctoral Research Associate
University of East Anglia
Department of Clinical Psychology, Norwich Medical School, University of East Anglia
Norwich Research Park, Norwich
NR47TJ

Dear Dr Kishita

Study title: The attitudes to ageing questionnaire for young adults (AAQ-Y): Development and psychometric properties
REC reference: 15/SW/0270
IRAS project ID: 185211

Thank you for your letter of 15 September 2015, responding to the Proportionate Review Sub-Committee's request for changes to the documentation for the above study.

The revised documentation has been reviewed and approved by the sub-committee.

We plan to publish your research summary wording for the above study on the HRA website,

together with your contact details. Publication will be no earlier than three months from the date of this favourable opinion letter. The expectation is that this information will be published for all studies that receive an ethical opinion but should you wish to provide a substitute contact point, wish to make a request to defer, or require further information, please contact the REC Manager Mrs Naazneen Nathoo, nrescommittee.southwest-bristol@nhs.net. Under very limited circumstances (e.g. for student research which has received an unfavourable opinion), it may be possible to grant an exemption to the publication of the study.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised.

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations.

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database. This should be before the first participant is recruited but no later than 6 weeks after recruitment of the first participant.

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" above).

Approved documents

The documents reviewed and approved by the Committee are:

Document	*Version*	*Date*
Copies of advertisement materials for research participants [Invitation letter to participants (NHS online)]	ver 1.0	15 July 2015
Copies of advertisement materials for research participants [Invitation letter to participants (UEA online)]	ver 1.0	15 July 2015
Copies of advertisement materials for research participants [Invitation letter to participants (UEA face-to-face)]	ver 1.0	15 July 2015
Covering letter on headed paper [Covering letter]	ver 1.0	27 August 2015
Covering letter on headed paper [Covering letter]	ver 1.1	15 September 2015
IRAS Checklist XML [Checklist_27082015]		27 August 2015
IRAS Checklist XML [Checklist_28082015]		28 August 2015
IRAS Checklist XML [Checklist_17092015]		17 September 2015
Letter from sponsor [Local RD research governance committee provisional approval letter]	ver 1.0	07 August 2015
Other [Summary CV for Primary collaborator]	ver 1.0	11 February 2015
Participant consent form [Consent form face-to-face]	ver 1.0	16 July 2015
Participant information sheet (PIS) [PIS and consent form online (NHS)]	ver 1.0	20 July 2015
Participant information sheet (PIS) [PIS and consent form online (UEA)]	ver 1.0	20 July 2015
Participant information sheet (PIS) [PIS face-to-face (NHS)]	ver 1.0	20 July 2015
Participant information sheet (PIS) [PIS face-to-face (UEA)]	ver 1.0	20 July 2015
REC Application Form [REC_Form_28082015]		28 August 2015
Research protocol or project proposal [Research protocol]	ver 1.0	13 July 2015
Summary CV for Chief Investigator (CI) [Summary CV for CI]	ver 1.0	09 April 2015
Validated questionnaire [Questionnaires]	ver 1.0	15 July 2015

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for

Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

Feedback

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance

We are pleased to welcome researchers and R & D staff at our NRES committee members' training days – see details at http://www.hra.nhs.uk/hra-training/

15/SW/0270 Please quote this number on all correspondence

With the Committee's best wishes for the success of this project.

Yours sincerely

pp. Dr Pamela Cairns
Chair

Email: nrescommittee.southwest-bristol@nhs.net

Enclosures: *"After ethical review – guidance for researchers" [SL-AR2]*

Copy to: Dr Bonnie Teague, Norfolk and Suffolk NHS Foundation Trust
Research and Development

Appendix B. Questionnaire battery

Please answer the following questions by either ticking the appropriate answer or filling in the blank. Please make sure you answer all questions. There is no time limit so please take as long as you need to answer the questionnaire. PLEASE COMPLETE ALL SECTIONS.

1. How old are you?	**_________ years**		
2. How do you identify your gender?	**☐ Male**	**☐ Female**	
3. What is your marital status?	**☐ Divorced Married**	**☐ Civil Partner**	**☐ Partner**
	☐ Single	**☐ Widowed**	**☐ Prefer not to say**
4. What is your ethnicity?	**☐ White**	**☐ Mixed or multiple ethnic groups**	
	☐ Asian or Asian British		
	☐ Black, African, Caribbean or Black British		

	☐ Other ethnic group ☐ Prefer not to disclose
5. Highest level of completed education received (this does not include education you are currently enrolled in)	**☐ None ☐ Primary ☐ Secondary** **☐ A-Levels or equivalent ☐ Undergraduate** **☐ Masters ☐ PhD or doctorate**

6. If you are currently in education please answer the following question

a) What is the level of your current education?	**☐ A-levels**	**☐ Undergraduate**	**☐ Masters**
	☐ PhD or Doctorate	**☐ Other (please state) ______________**	

7. Are you currently employed?	**☐ Full time**	**☐ Part time**	**☐ No**

8. What is your main reason for attending the youth service? ___________ ___________ ___________

9. In your opinion at what age does old age start?

☐ **30 – 40yrs** ☐ **40-50yrs**

☐ **60-70yrs** ☐ **70yrs+**

---

10. Quality of life

Please answer the following questions by circling the appropriate answer.

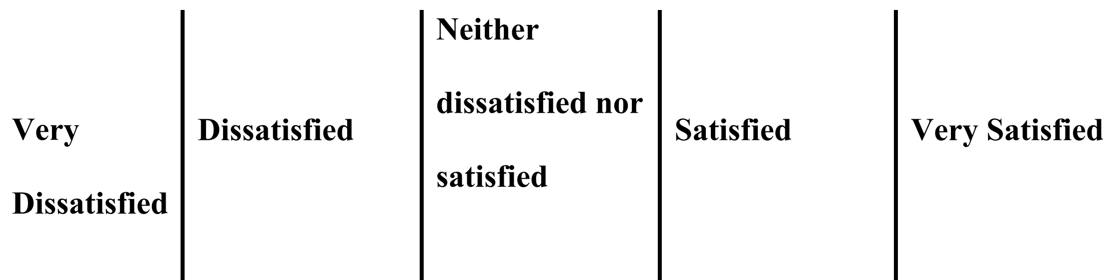
a) **How would you rate your quality of life?**

Very Poor	Poor	Neither poor nor good	Good	Very Good

b) **How satisfied are you with your health?**

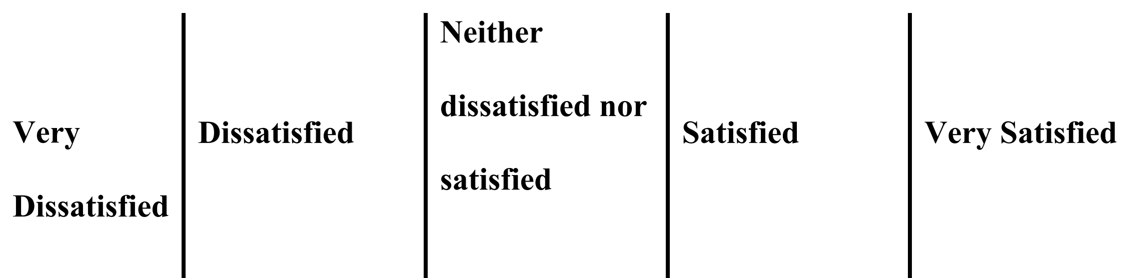
Very Dissatisfied	Dissatisfied	Neither dissatisfied nor satisfied	Satisfied	Very Satisfied

c) **In general, how satisfied are you with your life?**



Very Dissatisfied	Dissatisfied	Neither dissatisfied nor satisfied	Satisfied	Very Satisfied

d) How satisfied are you with the quality of your life?



Very Dissatisfied	Dissatisfied	Neither dissatisfied nor satisfied	Satisfied	Very Satisfied

11. Previous experiences related to ageing

Please answer the following questions by ticking the appropriate answer

Do you have regular contact with older people? (e.g. family members, patients, neighbours)

☐ Yes ☐ No

i) If yes, how often do you have contact with older people?

☐ More than weekly	☐ More than monthly	☐ Less than monthly

ii) If yes, is this contact mostly with healthy or sick older people?

☐ Mostly fit/ healthy older people	☐ Mostly sick/ frail older people	☐ Equally with both categories of older people

Attitudes to Ageing Questionnaire for Young Adults (AAQ-Y)

The following questions ask how much you agree with the following statements. If you agree with the statements an extreme amount, circle the number next to "strongly agree". If you do not agree with the statement at all, circle the number next to "strongly disagree". You should circle one of the numbers in between if you wish you indicate your answer lies between "strongly disagree" and "strongly agree".

1. I believe as people get older they are better able to cope with life.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

2. I believe it is a privilege to grow old.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

3. I believe old age is a time of loneliness.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

4. I believe wisdom comes with age.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

5. I believe there are many pleasant things about growing older.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

6. I believe old age is a depressing time of life.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

7. I believe it is important to take exercise at any age.

Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1	2	3	4	5

8. I believe older people find growing old easier than they expect it to be.

Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1	2	3	4	5

9. I believe older people find it more difficult to talk about their feelings as they get older.

Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1	2	3	4	5

10. I believe older people are more accepting of themselves as they grow older.

Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
	2	3	4	5

1				

11. I believe older people don't feel they are old.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

12. I believe old age is mainly a time of loss.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

13. I believe older persons' identity is not defined by their age.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

14. I believe older people have more energy than they expect for their age.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

15. I believe older people lose their physical independence as they get older.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

16. I believe problems with physical health do not hold back older people from doing what they want to.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

17. I believe older people find it more difficult to make new friends as they get older.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

18. I believe it is very important for older people to pass on the benefits of their experiences to younger people.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

19. I believe older people think their life has made a difference.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

20. I believe older people don't feel involved in society because of their age.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

21. I believe older people want to give a good example to younger people.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

22. I believe older people feel excluded from things because of their age.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

23. I believe older people's health can be better than they expect for their age.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

24. I believe older people keep themselves as fit and active as possible by exercising.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

Ageing Anxiety Scale (AAS)

Instruction

The following questions ask how much you agree with the following statements. If you agree with the statements an extreme amount, circle the number next to "strongly agree". If you do not agree with the statement at all, circle the number next to "strongly disagree". You should circle one of the numbers in between if you wish you indicate your answer lies between "strongly disagree" and "strongly agree".

1. **I enjoy being around old people.**

Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1	2	3	4	5

2. **I fear that when I am old all my friends will be gone.**

Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1	2	3	4	5

3. **I like to go visit my older relatives.**

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

4. **I have never lied about my age in order to appear younger.**

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

5. **I fear it will be very hard for me to find contentment in old age.**

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

6. **The older I become the more I worry about my health.**

Strongly Disagree	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

1				

7. **I will have plenty to occupy my time when I am old.**

Strongly Disagree 1	**Disagree 2**	**Uncertain 3**	**Agree 4**	**Strongly Agree 5**

8. **I get nervous when I think about someone else making decisions for me when I am old.**

Strongly Disagree 1	**Disagree 2**	**Uncertain 3**	**Agree 4**	**Strongly Agree 5**

9. **It doesn't bother me at all to imagine myself as being old.**

Strongly Disagree 1	**Disagree 2**	**Uncertain 3**	**Agree 4**	**Strongly Agree 5**

10. **I enjoy talking with old people.**

Strongly Disagree 1	**Disagree 2**	**Uncertain 3**	**Agree 4**	**Strongly Agree 5**

11. I expect to feel good about life when I am old.

Strongly Disagree 1	**Disagree 2**	**Uncertain 3**	**Agree 4**	**Strongly Agree 5**

12. I have never dreaded the day I would look in the mirror and see grey hairs.

Strongly Disagree 1	**Disagree 2**	**Uncertain 3**	**Agree 4**	**Strongly Agree 5**

13. I feel very comfortable when I am around an old person.

Strongly Disagree	**Disagree 2**	**Uncertain 3**	**Agree 4**	**Strongly Agree 5**

1

14. I worry that people will ignore me when I am old.

Strongly Disagree 1	**Disagree 2**	**Uncertain 3**	**Agree 4**	**Strongly Agree 5**

15. I have never dreaded looking old.

Strongly Disagree 1	**Disagree 2**	**Uncertain 3**	**Agree 4**	**Strongly Agree 5**

16. I believe that I will still be able to do most things for myself when I am old.

Strongly Disagree 1	**Disagree 2**	**Uncertain 3**	**Agree 4**	**Strongly Agree 5**

17. I am afraid that there will be no meaning in life when I am old.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

18. I expect to feel good about myself when I am old.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

19. I enjoy doing things for old people.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

20. When I look in the mirror, it bothers me to see how my looks have changed with age.

Strongly Disagree 1	Disagree 2	Uncertain 3	Agree 4	Strongly Agree 5

Fraboni Scale of Ageism (FSA)

Instruction

The following questions ask how much you agree with the following statements. If you agree with the statements an extreme amount circle the number next to “strongly agree”. If you do not agree with the statements at all, circle the number next to “Strongly disagree”. You should circle one of the numbers in between if you wish to indicate your answer lies somewhere between “Strongly disagree” and “Strongly agree”.

Please answer all the questions. If you are unsure about which response to give to a question, please choose the one that appears most appropriate.

In the statements, "old people ..." refers to person sixty five years of age and older.

1. Teenage suicide is more tragic than suicide among the old.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

2. **There should be special clubs set aside within sport facilities so that old people can compete at their own level. (D)**

Strongly disagree	**Disagree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**

3. **Many old people are stingy and hoard their money and possessions.**

Strongly disagree	**Disagree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**

4. **Many old people are not interested in making new friends, preferring instead the circle of friends they have had for years.**

Strongly disagree	**Disagree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**

5. **Many old people just live in the past.**

Strongly disagree	**Disagree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**

6. I sometimes avoid eye contact with old people when I see them.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

7. I don't like it when old people try to make conversation with me.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

8. Older people deserve the same rights and freedoms as do other members of our society.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

9. Complex and interesting conversation cannot be expected from most old people.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

10. Feeling depressed when around old people is probably a common feeling.

Strongly disagree	**Disagree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**

11. Old people should find friends their own age.

Strongly disagree	**Disagree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**

12. Old people should feel welcome at the social gatherings of young people.

Strongly disagree	**Disagree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**

13. I would prefer not to go to an open house at a senior's club, if invited.

Strongly disagree	**Disagree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**

14. Old people can be very creative.

Strongly disagree	**Disagree**	**Agree**	**Strongly Agree**

1	2	3	4

15. I personally would not want to spend much time with an old person.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

16. Most old people should not be allowed to renew their driver's licenses.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

17. Old people don't really need to use our community sports facilities.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

18. Most old people should not be trusted to take care of infants.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

19. Many old people are happiest when they are with people their own age.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

20. It is best that old people live where they won't bother anyone.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

21. The company of most old people is quite enjoyable.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

22. It is sad to hear about the plight of the old in our society these days.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

23. Old people should be encouraged to speak out politically.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

24. Most old people are interesting, individualistic people.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

25. Most old people would be considered to have poor personal hygiene.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

26. I would prefer not to live with an old person.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

27. Most old people can be irritating because they tell the same stories over and over again.

Strongly disagree	Disagree	Agree	Strongly Agree

1	2	3	4

28. Old people complain more than other people do.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

29. Older people do not need much money to meet their needs.

Strongly disagree	Disagree	Agree	Strongly Agree
1	2	3	4

Patient Health Questionnaire-9 (PHQ-9)

Instruction

Over the last 2 weeks, how often have you been bothered by any of the following problems?

		Not at all	Several days	More than half the days	Nearly every day
1.	Little interest or pleasure in doing things	0	1	2	3
2.	Feeling down, depressed, or hopeless	0	1	2	3
3.	Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4.	Feeling tired or having little energy	0	1	2	3
5.	Poor appetite or overeating	0	1	2	3
6.	Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
	Trouble concentrating on things, such as reading the	0	1	2	3

7.	**newspaper or watching television**				
8.	**Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual**	**0**	**1**	**2**	**3**
9.	**Thoughts that you would be better off dead or of hurting yourself in some way**	**0**	**1**	**2**	**3**

Generalized Anxiety Disorder-7 (GAD-7)

Instruction

Over the last 2 weeks, how often have you been bothered by any of the following problems?

		Not at all	**Several days**	**More than half the days**	**Nearly every day**
1.	**Feeling nervous, anxious, or on edge**	**0**	**1**	**2**	**3**
2.	**Not being able to stop or control worrying**	**0**	**1**	**2**	**3**

3.	**Worrying too much about different things**	**0**	**1**	**2**	**3**
4.	**Trouble relaxing**	**0**	**1**	**2**	**3**
5.	**Being so restless that it's hard to sit still**	**0**	**1**	**2**	**3**
6.	**Becoming easily annoyed or irritable**	**0**	**1**	**2**	**3**
7.	**Feeling afraid as if something awful might happen**	**0**	**1**	**2**	**3**

Appendix C

Table 1. Sample characteristics

(*N* = 162)	
Age: Mean (SD)	24.3 (5.1)
Sex: *n* (%)	
Male	36 (24.1)
Female	122 (75.3)
Marital Status: *n* (%)	
Single	90 (55.6)
Partner	51 (31.5)
Married	16 (9.9)
Civil partner	2 (1.2)
Widowed	1 (0.6)
Prefer not to say	2 (1.2)
Ethnicity: *n* (%)	
White	132 (81.5)
Asian or Asian British	14 (8.6)
Black, African, Caribbean or Black British	7 (4.3)
Other	5 (3.1)
Prefer not to say	4 (2.5)
Highest or Current Level of Education; *n* (%)	
Secondary	9 (5.6)
A – Level or equivalent	15 (9.3)
Undergraduate	58 (35.8)
Masters	4 (2.5)
PhD or doctorate	74 (45.7)
Other	2 (1.2)
Completed a placement involving the care of older people: *n* (%)	
Yes	46 (28.4)

No	116 (71.6)
Received teaching on aging: *n* (%)	
Yes	65 (40.1)
No	97 (59.9)
Have regular contact with older people: *n* (%)	
Yes	121 (74.7)
No	41 (25.3)
Frequency of contact with older people: n (%)	
No regular contact	39 (24.1)
Less than monthly	24 (14.8)
More than monthly	49 (30.2)
More than weekly	50 (30.9)
Type of older person have contact with: *n* (%)	
No regular contact	38 (23.5)
Mostly sick/frail	20 (12.3)
Mostly fit/healthy	56 (34.6)
Equally with both categories	48 (29.6)
GAD-7: *n* (%)	
Minimal	53 (32.7)
Mild	50 (30.9)
Moderate	34 (21.0)
Severe	25 (15.4)
PHQ-9: *n* (%)	
Minimal	62 (38.3)
Mild	40 (24.7)
Moderate	22 (13.6)
Moderately Severe – Severe	18 (11.1)
Severe	20 (12.3)

Appendix D

Table 3: Frequency of 'Uncertain' responses per item

Questionnaire Item	*n* (%)
1. I believe as people get older they are better able to cope with life.	54 (33.3)
2. I believe it is a privilege to grow old.	29 (17.9)
3. I believe old age is a time of loneliness.	**61 (37.7)**
4. I believe wisdom comes with age.	25 (15.4)
5. I believe there are many pleasant things about growing older.	40 (24.7)
6. I believe old age is a depressing time of life.	57 (35.2)
7. I believe it is important to take exercise at any age.	4 (2.5)
8. I believe older people find growing old easier than they expect it to be.	**86 (53.1)**
9. I believe older people find it more difficult to talk about their feelings as they get older.	**64 (39.5)**
10. I believe older people are more accepting of themselves as they grow older.	50 (30.9)
11. I believe older people don't feel they are old.	49 (30.2)

12. I believe old age is mainly a time of loss.	36 (22.2)
13. I believe older persons' identity is not defined by their age.	19 (11.7)
14. I believe older people have more energy than they expect for their age.	**81 (50.0)**
15. I believe older people lose their physical independence as they get older.	38 (23.5)
16. I believe problems with physical health do not hold back older people from doing what they want to.	31 (19.1)
17. I believe older people find it more difficult to make new friends as they get older.	**64 (40.1)**
18. I believe it is very important for older people to pass on the benefits of their experiences to younger people.	14 (8.6)
19. I believe older people think their life has made a difference.	**77 (47.5)**
20. I believe older people don't feel involved in society because of their age.	51 (31.5)
21. I believe older people want to give a good example to younger people.	41 (25.3)
22. I believe older people feel excluded from things because of their age.	44 (27.2)

23. I believe older people's health can be better than they expect for their age.	46 (28.4)
24. I believe older people keep themselves as fit and active as possible by exercising.	**71 (43.8)**

** Items in bold represent 'Uncertain' as the most frequently endorsed response*

Appendix

Figure 1. Scree plot for EFA of complete dataset

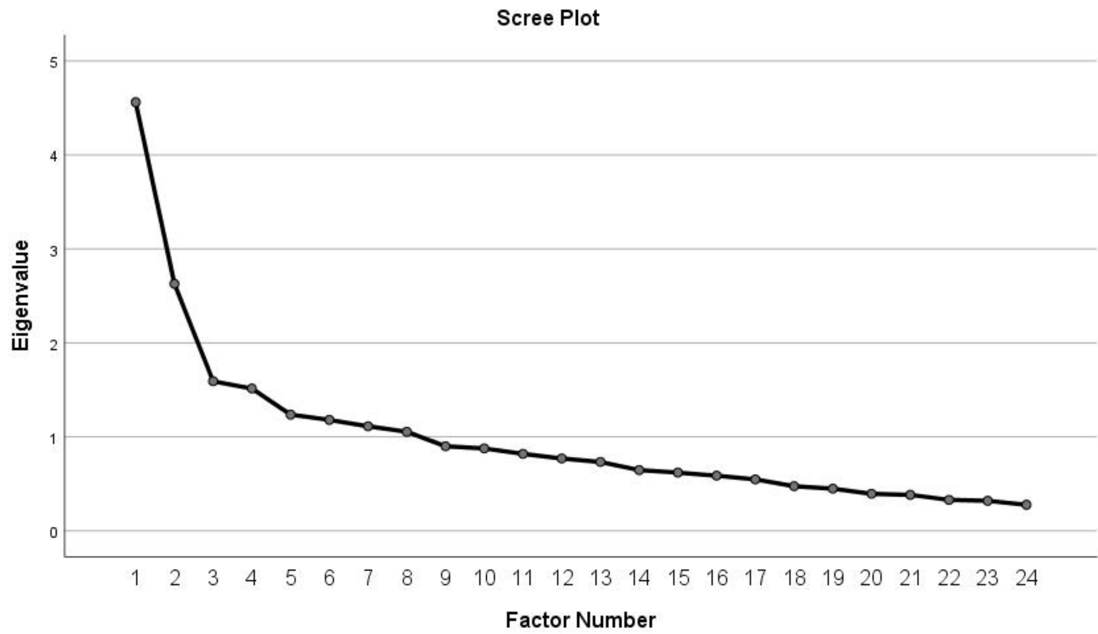
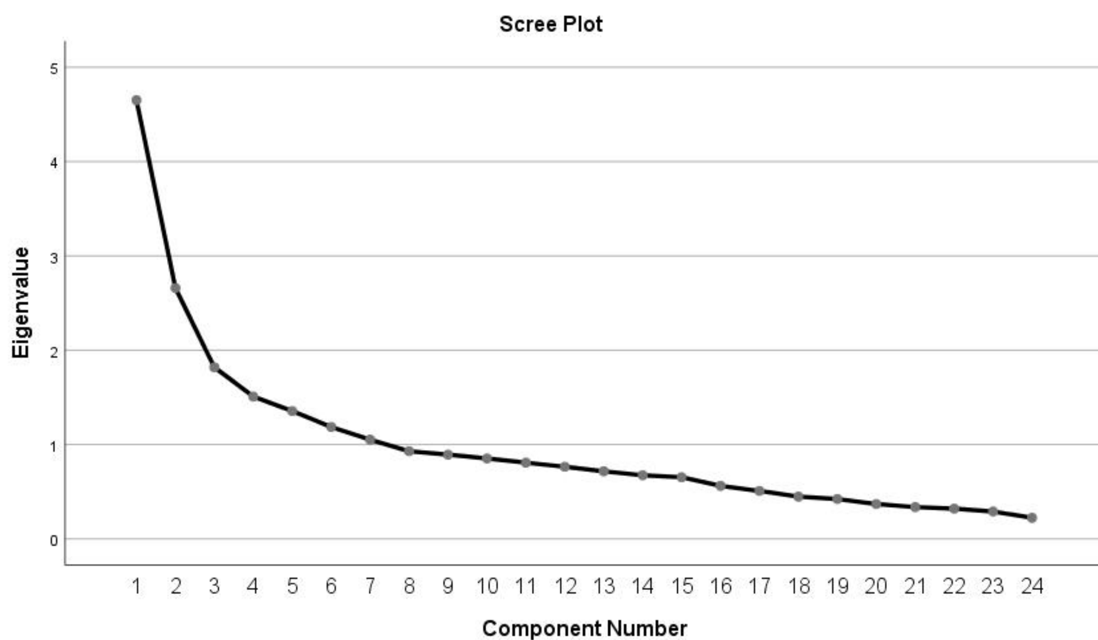


Figure 2. Scree plot for EFA of student dataset excluding severe scores



Appendix F

The International Journal of Aging and Human Development - Instructions to Authors

All papers submitted to *IJAHD* are reviewed with respect to their scholarly merit and the extent to which they advance valid knowledge about human development and aging across a variety of disciplinary perspectives within the social sciences (e.g. psychology, sociology, anthropology, and economics). Interdisciplinary perspectives are strongly encouraged and preference is given to papers that make a new and notable contribution. Such contributions may include —an idea, a discovery, a methodology, or a connection between basic and applied developmental science of aging. Preference is also given to papers that are deemed to be of general theoretical significance. Although expository and review papers will be considered if they contain a strong scientific focus, the primary purpose of *IJAHD* is to publish methodologically sound, empirical studies that advance the theoretical and applied knowledge base of human development and aging. We also invite proposals for 'special issues' that fit with the aims and scope of *IJAHD*.

Manuscripts should be submitted in APA style through the International Journal of Aging and Human Development ManuscriptCentral site.

For formatting guidelines, please refer to the APA Style Quick Answers - Formatting page.

Authors seeking assistance with English language editing should consider using SAGE Language Services.

AHD offers optional open access publishing via the SAGE Choice program. For more information please visit the SAGE Choice website. For information on funding body

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Appendix G

Email communication from The International Journal of Human Aging

From: Julie Patrick <jpatric2@wvu.edu>

Sent: 14 December 2018 12:25:51

To: Hannah Grocott (MED - Postgraduate Researcher)

Subject: Re: The International Journal of Aging and Human Development - submission query

hi Hannah,

Thank you for reaching out. We do not have a specific word count. We encourage a max length around 25 (+/-) pages, but are more concerned with quality. Please follow APA format, avoid costly (to the author) color figures, limit tables to those that are most necessary, cite relevant scholarship from the journal, and suggest some unbiased reviewers, including at least one from the Editorial Board.

I look forward to receiving your scholarship for review.

Julie

Julie Hicks Patrick, PhD

Professor of Psychology

West Virginia University

The Attitudes to Aging Questionnaire for Young Adults (AAQ-Y): Development and Psychometric Properties

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Chapter four: Additional Methodology and Results

Word count: 1414

Chapter four: Additional methodology and results

In this chapter additional methodological details and results are presented. These details were not included in the empirical paper due to space restrictions but are important to consider within the wider study context. Ethical considerations are discussed followed by a power calculation for sample size and findings from the exploratory factor analysis.

Methodology

Ethical considerations

The study commenced before the implementation of the 2016 General Data Protection Regulation (GDPR). The study adhered to the 1998 Data Protection Act with respect to the storage of personal data on computers and paper filing systems.

Informed consent was obtained from every participant recruited into the study. Risk associated with participation in this questionnaire-based study was low, it remained possible however that participants could become distressed by answering questions in the questionnaire battery. To manage this, participants recruited via the online questionnaire (the UEA student sample) were given the opportunity to withdraw from the study at the end of each screen. If participants choose to abandon the questionnaires prematurely, they were re-directed to the final screen with debriefing information and information about options for care. Once the questionnaires were completed, all participants were directed to a screen thanking them for their participation and the same debriefing information and options for care were provided.

The recruitment of the clinical sample of young people attending the youth mental health service was conducted face to face (excluding two participants who completed postal questionnaires) and the questionnaires completed in the presence of the

researcher. This allowed for any emotional distress and associated risk to be monitored at the time of participation and managed appropriately. Participants were made aware at the time of consent that their responses were confidential unless they were to respond in a way that indicated a risk to themselves or others. In this instance the researcher would have a duty of care to break that confidentiality and inform a member of the youth service involved in the young persons' care. The young person's Care Co-ordinator at the youth service was contacted and made aware of the risk so they could support the young person appropriately. In the instance where questionnaires were not completed with the researcher (i.e. returned via postal methods), if risk was indicated the researcher would contact the relevant person in the youth service as soon as they became aware. Throughout the duration of the study there were six occasions where the researcher responded to the risk protocol in this way.

Results

Exploratory factor analysis

Confirmatory factor analysis revealed the factor structure of the original AAQ did not perform well when imposed on the young adult data. Exploratory factor analysis was performed to explore the emerging factor structure based on the strength of correlations between individual items. The first EFA was performed on the full dataset ($n = 162$). In order to attain simple factor structure the scree plot was examined to identify the number of factors to be rotated based on the amount of variance accounted for in the data. There is generally agreement amongst factor analysts that the scree test is the best solution to identifying the correct number of factors and is preferable to other methods such as selecting eigen values greater than 1 (Kline, 1994). The scree test revealed a three-factor structure so EFA was performed employing a promax rotation and using the maximum

likelihood extraction method set to three fixed factors. Co-efficients below 0.3 were suppressed based on recommendations by Hair, Black, Babin and Anderson (2010). Table 4. Shows the item loadings on the three-factor solution. Five items (items 7, 9, 13, 16, 18) failed to load onto any factor due to low inter-item correlations. Analysis of Cronbach's coefficients revealed a correlation of 0.69 for factor one, 0.51 for factor two and 0.68 for factor three. Removal of item 10 on factor one increased alpha to 0.76 however no further improvements could be made on the remaining factors, demonstrating poor internal consistency of the scale overall. To explore the possible influence of clinical outliers on the overall factor structure, an EFA was repeated on the student only dataset with the data from the clinical group and those participants scoring in the 'severe' range for depression and/or anxiety in the student group removed (n = 122). The three-factor structure remained when examined under the scree test, however the item loadings for each factor differed, as seen in Tables 4 and 5 below. Reliability analysis revealed the internal consistency remained poor with Cronbach's co-efficients demonstrating inadequate inter-item correlations on each subscale ($\alpha = 0.55$, $\alpha = 0.58$, $\alpha = 0.66$). The failure to produce a consistent picture of strong inter-item correlations and high factor loadings suggests the items of the AAQ-Y were not representative of a clear underlying theoretical construct and would require significant revision.

Table 4. Exploratory factor analysis of AAQ-Y items for the full dataset (*n* = 162)

AAQ-Y items	Factor 1	Factor 2	Factor 3
I believe as people get older they are better able to cope with life.	.513		
I believe it is a privilege to grow old.	.363		
I believe old age is a time of loneliness.	.394		
I believe there are many pleasant things about growing older.	.590		
I believe old age is a depressing time of life.	.622		
I believe older people find growing old easier than they expect it to be.	.384		
I believe older people are more accepting of themselves as they grow older.	.314		
I believe older people don't feel they are old.	.438		
I believe old age is mainly a time of loss.	.539		
I believe older people have more energy than they expect for their age.	.360		
I believe older people's health can be better than they expect for their age.	.461		
I believe older people lose their physical independence as they get older.		.483	
I believe older people find it more difficult to make new friends as they get older.		.567	
I believe older people don't feel involved in society because of their age.		.592	
I believe older people feel excluded from things because of their age.		.841	
I believe wisdom comes with age.			.426
I believe older people think their life has made a difference.			.378
I believe older people want to give a good example to younger people.			.762
I believe older people keep themselves as fit and active as possible by exercising.			.393

Table 5. Exploratory factor analysis of AAQ-Y items for the UEA dataset excluding severe scores (*n* = 122)

AAQ-Y items	Factor 1	Factor 2	Factor 3
I believe as people get older they are better able to cope with life.	.313		
I believe old age is a time of loneliness.	.630		
I believe there are many pleasant things about growing older.	.451		
I believe old age is a depressing time of life.	.615		
I believe older people find it more difficult to talk about their feelings as they get older.	.380		
I believe old age is mainly a time of loss.	.556		
I believe older people lose their physical independence as they get older.	.510		
I believe older people find it more difficult to make new friends as they get older.	.358		
I believe older people don't feel involved in society because of their age.	.730		
I believe older people feel excluded from things because of their age.	.758		
I believe older people keep themselves as fit and active as possible by exercising.	.417		
I believe older people find growing old easier than they expect it to be.		.615	
I believe older people are more accepting of themselves as they grow older.		.417	
I believe older people don't feel they are old.		.302	
I believe older people have more energy than they expect for their age.		.715	
I believe problems with physical health do not hold back older people from doing what they want to.		.311	
I believe older people think their life has made a difference.		.325	
I believe older people's health can be better than they expect for their age.		.334	
I believe it is a privilege to grow old.			.549
I believe wisdom comes with age.			.427
I believe it is important to take exercise at any age.			.388
I believe older persons' identity is not defined by their age.			.340
I believe it is very important for older people to pass on the benefits of their experiences to younger people.			.782
I believe older people want to give a good example to younger people.			.458

Chapter five: Discussion and critical appraisal

Word count: 4702

Chapter five: Discussion and critical appraisal

Summary of main findings

This thesis portfolio speaks to the issue of ageing populations. It is comprised of a systematic review addressing the prevalence of a well-being indicator commonly associated with ageing, loneliness, and an empirical paper concerned with developing a valid and reliable measure to access young adults' attitudes to ageing.

The systematic review revealed the prevalence of loneliness in young and older adults varied across the 11 included studies, with seven reporting higher rates in young adults and four in older adults. Contrary to stereotypical views about loneliness being a specific feature of ageing, the pooled prevalence of eight studies found 21.1% in young adults and 17.4% in older adults. This suggests loneliness may be more of a problem in youth than it is in older age, however a prevalent issue for both. These findings appear consistent with Perlman's (1990) meta-analysis which also reported the highest levels of loneliness in young adults. This review aimed to offer an update on the loneliness research published since Perlman's work. Although some of the methodological issues described by Perlman were also identified as limitations of the current review (such as differential volunteering rates and measurement inequivalence across age groups) the findings remain important.

Results suggest the problem of loneliness in early adulthood has been prevalent for almost three decades however our perceptions, understanding and interventions have remained relatively stagnant and focused predominantly on later life. In terms of what the present review added to this understanding, it is important to note that the results confirmed previous research that partner status and living arrangements were frequently found to have an impact on reported levels of loneliness across both age categories.

Having a partner has repeatedly been shown to be one of the most important protective factors against loneliness for adults (Nicolaisen & Thorsen, 2014; Nicolaisen & Thorsen, 2017; Pinquart & Sorensen, 2003; Stack, 1998; Sundstrom et al., 2009). More specifically, the relationship between living arrangements and loneliness appeared to be mediated be the quality of relationships as did the significance of social relationships and loneliness. This is consistent with Luhmann and Hawkley's (2016) research reporting indictors of social relationships (social engagement, number of friends, contact frequency) were universally associated with loneliness regardless of age.

The quantity versus quality debate when it comes to loneliness and social relationships remains unclear and is likely to vary between age stages. This is important in the context of the current project because Victor and Yang (2012) found for young adults the quantity of social engagements was the best predictor of loneliness whereas for those over 60 years it was the quality of the relationships that was most significant. Carstensen's (1993; 1995) Socioemotional Selectivity Theory (SST) could be used to make sense of this from an age normative perspective. SST claims that the aims and aspirations of social relationships reflect a perception of how much time one has left and therefore vary according to age and life stage. In youth, when the future is perceived as long and open-ended, goals related to gathering information and expanding horizons are prioritized. At this developmental stage, contact with a broad spectrum of people provides valuable information about the physical and social world (Nicolaisen & Thorsen, 2017). In later life, when time is perceived as short and constrained, emotional satisfaction and meaning are prioritized, leaving smaller networks of emotionally close relationships as preferred. The availability of internet-based social media platforms, popular with young adults today, has provided an easily accessible source of huge amounts of social information and opportunities for social connections. The high

prevalence of loneliness experienced by young adults despite large social networks might be a product of this gap between quantity and quality, resulting from a lack of emotionally close or satisfying relationships which protect against loneliness.

Physical and mental health factors were found to be related to loneliness in both age categories, however, the direction of these relationships remains unclear as loneliness can be a precursor or consequence for both. The association between poorer physical and mental health and loneliness lends support for the need to better understand the importance of loneliness as an independent risk factor in each age category, adopting a longitudinal perspective to explore causal relationships (Richard et al., 2017).

Variability in study quality was also evident however attempts to minimise the influence of bias, giving greater credence to the more methodologically robust studies did not significantly impact the overall prevalence findings. A significant limiting factor in the interpretation of the review was the use of different measurement tools and quantitative definitions of loneliness. Problems with different measurement approaches in studying loneliness has been the subject of previous research (Nicolaisen & Thorsen, 2014) and is problematic for combining results in a quantitative synthesis. Prevalence rates of loneliness in the current review however, did not appear to be significantly influenced by the type of measurement approach adopted when comparing young and older adults.

The findings from the empirical study concluded that the AAQ-Y, in its current format based on the items from the original AAQ, was not a reliable measure of young adults' attitudes to ageing. The results of the confirmatory factor analysis revealed the AAQ-Y did not perform well with the population of young adults included in this study. Assessment of a range of fit indices revealed a poor fit with the three-factor model based

on the original AAQ factor structure. Inadequate psychometric properties remained when tested under alternate conditions and exploratory factor analysis failed to produce a clear and consistent factor structure that could account for the variance in the data. Further research is needed to develop a scale consisting of items that are more relevant and meaningful for a younger population. Developing a reliable measure may benefit from a return to the original premise of the AAQ for older adults. A modified version of the AAQ-Y that taps into ageing attitudes from a personal, experiential standpoint whilst also addressing more general ageing attitudes across the lifespan.

Secondary analysis revealed the young adults attending the youth service with current mental health difficulties scored higher on measures of ageism and ageing anxiety than the non-clinical student sample. Existing literature has demonstrated anxiety around ageing is common in young adults (Allan & Johnson 2008; Duthie, Donaghy, Hons, & Fhea, 2009; Smith et al., 2017) however research into the attitudes of young adults with psychological difficulties towards ageing is currently limited. The findings of the empirical study can begin to make a useful contribution to this field however more work is needed to fully understand whether attitudes to ageing become symptom contaminated in the presence of psychological distress and what implications this may have on health-compromising behaviours and treatment outcomes in mental health.

Key strengths of the thesis

A key strength of this thesis is that it is concerned with issues related to a globally relevant topic; ageing populations. Increased life expectancy represents progress and has many benefits for individuals, families and societies however it also comes with some significant challenges. In the UK the House of Lords Select Committee on Public

Service and Demographic Change published a report titled 'Ready for Ageing?' (House of Lords, 2013) and identified attitudes to ageing as an important part of adapting to an ageing population and increasing older people's inclusion and participation in society. Tacking the challenges that accompany an ageing population requires a two-pronged approach; addressing issues of old age itself, improving well-being and promoting inclusion and participation but also addressing the anxieties and negative expectations of ageing in younger generations.

A strength of the systematic review was that it made explicit the problem of loneliness in young adults as well as the elderly by employing an empirical approach to comprehensively review the published literature since the 1990 review. It offered an update which is more methodologically robust and based on a large sample drawn from 25 European countries, Australia, New Zealand and Singapore. The findings highlight the need to address this issue in younger populations as well as continuing to tackle the challenges of loneliness in later life. The review is timely and relevant in light of the growing public and political interest in loneliness and its health implications. The review was helpful to promote an age-normative approach to understanding and tackling loneliness and supports the need for further research to better understand the experience of loneliness particularly for young adults.

The empirical paper contributed towards the existing knowledge base about attitudes to ageing and the challenges of assessing this construct in a younger population. The failure to replicate the factor structure of the original AAQ in the young adult data offers empirical evidence to suggest the concepts underlying young adults' attitudes to ageing are different to those of older adults, suggesting a new and novel approach to assessing attitudes should be considered. The research employed advanced statistical procedures including exploratory and confirmatory factor analysis and adhered to robust

recommendations around fit indices and model adequacy. Some researchers have been observed to deviate from recommendations around psychometric integrity in the quest for successful scale development (Intrieri, von Eye, & Kelly, 1995). This can have very damageing implications for the quality of the research later produced using these measures. The current researchers remained motivated by empirical rigour and scientific integrity and rejected the measure based on its current psychometric performance, which is a strength of this research despite the subsequent failure to meet the overall objective of the study.

The systematic review revealed that loneliness is at least as much a problem for young adults as it is for older adults. The AAQ-Y was developed based on the three domains of ageing identified as important in older adult research, psycho-social loss, physical change and psychological growth. Although the development of the AAQ-Y could be criticised for moving away from the individual experience, one of the defining features attributed to the success of the original AAQ (Laidlaw et al., 2007), it was not unreasonable to hypothesise that the beliefs young adults hold about the experiences of old age might map onto the experiences of older adults themselves. The findings of the empirical paper would suggest the concepts underlying attitudes to ageing are in fact quite different, which is valuable information to inform future research and further refinement of an AAQ-Y.

Key limitations of the thesis

A limitation of the systematic review was that it was not possible to utilise a quantitative approach to combine the study findings and estimate the overall prevalence of loneliness in the two sub-populations, which may have more accurately addressed the review question. Rosenthal and DiMatteo (2001) posit that meta-analysis allows

researchers to arrive at conclusions that are more accurate and credible than those that can be drawn from a non-quantitative, narrative synthesis. The heterogeneity of the studies included and variability in measurement approaches adopted precluded a meta-analysis in this instance and the failure of three papers to adequately report the proportion data meant only eight studies could be combined to calculate a pooled prevalence. This limits the extent to which the review can credibly conclude that young adults are lonelier than older adults in the general population. The quality of the studies included also varied which has implications for the overall findings. An aspect of study quality which should be highlighted is the degree to which response rates were adequate and low response rates managed appropriately. Only two of the 11 studies included achieved a two-point score for this item on the quality assessment measure (indicating issues had been adequately addressed). Difficulties with response rates in either of the target populations were most commonly cited as the reason for poor scores on this item. This was a methodological limitation also identified in Perlman's 1990 review and so warrants the same warning of caution when interpreting the findings.

A further methodological limitation in relation to the quality of the data included in the review relates to the type of publications included. Four of the studies were government or public health commissioned reports and three of the four had not been through a peer-review process. The reports were included in the review as they met inclusion criteria by being referenced in other peer-reviewed included papers however their inclusion had implications for the overall quality of the data the review findings emerged from. Research published in peer-reviewed journals is subject to a thorough peer-review process where methodological rigour and resultant findings are scrutinised, giving rise to more credible and reliable results. Research methods and report writing requirements for government and public health produced documents don't necessarily

adhere to the same procedures which has implications for the reliability of the findings. This can be seen in the quality assessment scores awarded to the four publications of this type in the current review, two receiving low quality ratings and two with medium.

For the empirical study the recruitment strategy was a limitation of the design and subsequent reliability of the findings. Problems with the sample characteristics have been discussed previously along with the difficulty of combining two quite distinct samples of young adults, university students and young people accessing secondary mental health care. It should also be noted that the recruitment strategy for the student sample and the clinical sample differed after the online survey failed to recruit any participants via the youth mental health service. The thesis researchers are based in a university setting so decisions around the study design and recruitment strategy was influenced by the immediate environment and the accessibility of a student population for research purposes, although this is not ideal it is common in academic research practices. The decision to include a sample of young people experiencing mental health difficulties was influenced by the primary researcher's personal research interests, along with previous research utilising the AAQ to understand the impact of depression and anxiety on attitudes to ageing in older adults. For the purposes of scale development however the study may have benefitted from focusing on recruiting a larger sample of young adults from the wider population which was ethnically, educationally and culturally diverse, rather than trying to include a clinical sample at this early stage in the research process. A future direction for the research might be to explore this area of interest using a version of the AAQ-Y which has been validated with a large, representative population of young adults to more accurately and meaningfully explore the relationship between psychological symptoms and attitudes to ageing in this population. As suggested in the empirical paper, a recruitment strategy employing a

social media platform may have been more effective at collecting such a sample. That being said, the problem of the AAQ-Y items reflecting older adults' attitudes and not those necessarily representative of young adults would have remained.

Links to theory and future directions

The findings of the systematic review provide evidence that research into ageing, particularly in the context of strategic planning for an ageing population, might benefit from focusing on the attitudes, experiences and behaviours of young adults allowing for a long-term preventative approach to addressing the well-being challenges of ageing. Understanding and addressing problems like loneliness in young adults as well as older adults is likely to have implications for ageing trajectories however further research is needed to understand how these experiences differ at different age stages. Understanding young adults' attitudes and experiences of developmental transitions in early adulthood, in the context of socio-economic challenges, and the impact of that on well-being factors like loneliness may be an interesting direction for research to explore. Additionally, developing age appropriate prevention or intervention approaches will be important to tackle the problem of loneliness. Masi, Chen, Hawkley and Cacioppo (2013) conducted a meta-analysis of interventions to reduce loneliness. Of the 20 randomised controlled studies identified, 11 included adults aged over 60 years, six included middle-aged adults and one included children, with young adults notably under-represented. The results suggested interventions aimed at addressing maladaptive social cognitions offered the best chance of reducing loneliness, however, simply extrapolating findings from research with one population to another is problematic. The potential for success in young adults based on the findings from other age groups certainly warrants further investigation.

Discussion and critical appraisal

The findings of the systematic review were based on community dwelling young and older adults. A further challenge for a successful loneliness management strategy might be around how to identify and engage these individuals. Reaching people at the point where loneliness is a problem for their well-being and functioning but is not currently co-occurring with a physical or mental health difficulty, placing them in contact with healthcare services, will be key. Preventing loneliness progressing from a normal transient experience to a more painful, damaging and chronic one should be a priority for public health and education strategies. Future research into the best ways of engaging these at-risk populations would be beneficial.

The empirical study proposes a novel approach to assessing young adults' attitudes to ageing. The suggestion is that the problem of conjecture might be addressed by first priming a person to reflect on their own experiences (e.g. "As I've grown older I've become more accepting of myself") and then consider future scenarios (e.g. "There are many pleasant things about growing older"). This approach may facilitate prospection rather than conjecture, a subtle but conceptually different way of thinking about future events. Prospection involves the generation and evaluation of mental representations of possible futures that requires imagination of future scenarios and prediction of future emotions (Roepke & Seligman, 2016). An AAQ-Y that assesses young adults' attitudes towards their own ageing made up of items which assess ageing experiences and future ageing expectations from a personal standpoint, as well as general items about old age (e.g. "I believe wisdom comes with age"), may create a more useful measure of individual experiences and a return to the original structure of the AAQ. Being able to explore how personal experiences of ageing in earlier life can influence projections of future own-ageing and general ageing attitudes may help to further our understanding of how ageing experiences, ageing anxiety and negative age stereotypes

shape our attitudes and expectations of ageing and later life. In their model of reconstructive memory, Miloyan, Pachana, & Suddendorf (2014) describe the biased retrieval of past episodes as influencing the construction of future episodes. If an individual has negative perceptions of their experiences of ageing and age-related transitions already encountered, these memories may influence their expectations of future ageing and ability to consider a positive future ageing experience.

Future research into the AAQ-Y may benefit from a return to the very early stages of scale development. This empirical study has suggested the attitudes of young adults do not map onto those of older adults. A new AAQ-Y might benefit from replicating the scale development procedures used for the original questionnaire, but with young adults. Starting with a full literature review and preliminary focus groups with young adults from different settings, backgrounds and cultures to generate a new set of items which reflect ageing experiences and projections of future ageing, whilst also adopting the language and terminology of young people themselves. As with the original AAQ a Delphi exercise could be helpful to gather ideas and feedback from institutions, organisations and services engaged with young adults (e.g. universities, youth centres, community groups, employment agencies, sports organisations etc.) around the topics addressed and items included. The resulting AAQ-Y could then be piloted again, utilising far reaching recruitment platforms such a social media, to collect a larger sample of data than the current study was able to and then analysing it using classical and modern psychometric methods (see Power et al., 2005).

Finally, the relationship between attitudes to ageing and psychological health in young adults is an interesting area not yet well understood. Some researchers have started to explore these and related issues. Mahoney (2018) was interested in attitudes to ageing and disordered eating in female university students. She discovered global and

specific disturbed eating behaviours were predicted by greater anxiety about the psychological challenges and interpersonal losses associated with ageing, more so than concern about ageing appearance as had been hypothesised *a priori*. Mahoney proposes interventions designed to tackle disordered eating in universities could benefit from incorporating techniques to challenge anxiety-provoking beliefs about personal ageing and the psychological challenges and interpersonal losses associated with it. The prevalence of symptoms of depression and anxiety in the sample included in the empirical study suggests relationships between attitudes to ageing and psychological health warrants further investigation. As Mahoney proposes, universities and educational establishments are well placed to deliver psycho-education and treatment programs that can reach large cohorts of young people who might not otherwise come into contact with services or support. Interventions delivered in these environments which promote more realistic expectations of ageing and reduce anxiety around developmental transitions and maturity fears might be a useful area for future research to consider.

Clinical implications

Loneliness

Loneliness can be a precursor and consequence of mental health difficulties making it of relevance to clinical psychology and therapeutic intervention. Cognitive behavioural therapy (CBT) approaches targeting maladaptive social cognitions have shown some success in successfully reducing loneliness (Masi et al., 2013). Results of the current review revealed some shared risk and/or protective factors against loneliness amongst young and older adults, however the specific quality and nature of these factors vary at different life stages. CBT, along with other therapeutic approaches, can be individualised to address the maladaptive social cognitions problematic at different life

stages, teaching lonely individuals to identify automatic negative thoughts and treat them as hypotheses to be tested rather than reality. A CBT approach would offer a flexible intervention that can address social cognitions perpetuating loneliness but in a way that can be individualised and age-normative, potentially improving outcomes for loneliness across the lifespan. The challenge remains however around how to deliver such interventions to community-dwelling lonely young and older adults, particularly in a climate where community services and resources are increasingly scarce. The government launched its first loneliness strategy in October 2018 in which it identified three overall goals; to improve the evidence base to better understand what causes loneliness, its impacts and what works to tackle it, to embed loneliness as a consideration across government policy and to build a national conversation on loneliness, to raise awareness of its impacts and to help tackle stigma (A connected society: a strategy for tackling loneliness, 2018). These goals would support further research into the efficiacy of interventions such as CBT but also pave the way for a critical psychology approach to understanding and tackling loneliness. Promoting a national conversation around loneliness and developing polices which address socio-economic issues of inequality and power may help to promote social change as a way of collectively taking responsibility for and combatting loneliness.

Attitudes to ageing

This thesis portfolio has reflected on some of the issues attitudes to ageing can have on both the individual and society. Negative attitudes to ageing can have implications for physical and mental health outcomes and could lead to difficulties with developmental transitions, leading to poorer individual ageing trajectories. This has implications for clinical psychology as individuals may experience psychological difficulties, either directly or indirectly related to their attitudes to ageing, at various

points in their lifetime. Considering the role of cognitions around ageing and one's future, as a precursor, perpetuator or consequence of a mental health difficulty could be helpful to guide and inform interventions. Negative views of the self has been the focus of much research and therapeutic intervention (e.g., Fennell, 1997; Metalsky, Joiner, Hardin, & Abramson, 1993; Orth, Robins, & Roberts, 2008). Literature on depression tells us negative views of the self, the world and the future can lead to feelings of great sadness and hopelessness, maintaining a cycle of low mood and depression (Beck, 1967; Beck, 1974). Perceiving the self and world as negative, but with the prospect of change and improvement in the future, could help to foster hope and reduce feelings of sadness and hopelessness, interrupting the cycle of distress. Roepke and Seligman (2016) propose that in depression it is the faulty mental representation of the future which causes feelings of sadness and dejection in the present. Representations of the future and individual ageing are inextricably linked. Helping clients to notice and change their faulty beliefs can help to alleviate symptoms (Beck, 1974). In the same vein, helping people to identify and change their negative attitudes towards ageing, whether it be a result of personal ageing experiences or negative age stereotypes, may help to reduce anxiety, promote resilience and positive expectations of age-related transitions and later life. The research of Popham et al. (2011a; 2011b) suggested reducing ageist attitudes and behaviours via education or health promotion programs may have the added benefit of reducing risk-taking and health compromising behaviours in younger populations. Secondary analysis conducted as part of the empirical study found that young adults currently experiencing psychological difficulties also displayed greater ageism and ageing anxiety. As these populations have also been identified as being at increased risk of engaging in risky behaviours, therapeutic interventions with these clinical populations might benefit from incorporating psychoeducation around the realities of ageing and

challenging negative age stereotypes to help the individual to consider the prospect of a more positive and hopeful future. This may help to reduce engagement in risky and therapy interfering behaviours.

Roepke and Seligman's (2016) work on depression and prospection posits faulty prospection and difficulties with future-thinking as the core processes underlying depression and other psychological disorders. They suggest transdiagnostic treatment approaches could be developed using future-orientated treatment strategies from CBT to change faulty prospection and alleviate clinical symptoms. Having tools like an AAQ-Y to help young adults to better understand their own ageing experiences and identify their attitudes to ageing and later life may be helpful in structuring and supporting such therapeutic work. A valid AAQ-Y questionnaire may also be a helpful tool for clinicians when formulating cases and thinking about how difficulties experienced at age-relevant transitions could be impacting future prospection and the implications of that on current psychological symptoms.

On a more landscape level, Clinical Psychologists can play an important role in shaping the development of public health programs and services that address some of the issues related to ageing and ageing populations. Offering a psychological perspective on how attitudes to ageing can influence the well-being and health promoting or compromising behaviours of young and older adults would be valuable when planning and implementing public health strategies and government initiatives to tackle problems of ageing.

Conclusion

Issues of population ageing have become a topic of global interest. The process of ageing is complex, individual and multifaceted, experienced differently at different life

stages. Research into young people's attitudes to ageing has predominantly focused on ageism and attitudes towards elderly and expectations of later life. This thesis has shown that problems such as loneliness, which used to be associated with later life, are very much a problem of today's young adults. Findings also suggest that the issues and experiences of ageing that are relevant and poignant for older adults aren't necessarily those most meaningful to young adults. This thesis portfolio proposes future research readdress what ageing means to young adults, how it is defined and conceptually understood. Young adults may not be afraid of their own mortality, as Terror Management Theory (Greenberg, Pyszczynski, & Solomon, 1986) would suggest, but are anxious or uncertain about their next developmental transition, experiencing 'maturity fears' as described in the work of Smith et al. (2017). These ideas may be particularly relevant in the current climate of social, political and economic change. Jobs can be difficult to find, housing unaffordable for many, and major political events such as the inauguration of a new President in the United States and the referendum to leave the European Union in the United Kingdom have contributed to uncertainty around our social, economic and political futures. This changing landscape may be influencing younger generations attitudes and fears around the more immediate realities of ageing. A shift in how we think about and research the issues of ageing may be helpful to develop new perspectives and insights to shape policies to promote inclusion and well-being across the lifespan.

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