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Research report

Investigating age-related differences in responses to screening items for internalising disorders in three national surveys

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ABSTRACT

Background: Epidemiological studies typically report lower prevalence of mental disorders among older adults relative to middle-aged and young adults. A possible explanation is that age-related bias in the screening items of diagnostic instruments leads to older adults being differentially screened out of the full assessment. This study investigated potential age-related bias in screening items for internalising disorders in three epidemiological surveys.

Method: Measurement invariance was estimated for the internalising disorder screening items in the 2007 and 1997 Australian National Survey of Mental Health and Wellbeing, and the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions. These surveys assessed mental disorders using the Composite International Diagnostic Interview (CIDI) and the Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV Version (AUDADIS-IV). A series of multi-group confirmatory factor analyses (CFA) were performed for each survey across older (65–85 years), middle (35–64 years) and young (16–34 years) adults.

Results: Differences between successive CFA models for each survey were negligible, indicating measurement invariance across age groups for the CIDI and AUDADIS-IV screening items.

Limitations: The number of items and symptoms representing internalising pathology differed between surveys. The samples excluded people in aged-care institutions.

Conclusions: While findings do not rule out that other measurement errors may be present (e.g., age-related bias in the remaining items), these results support the validity of the screening items in the CIDI and AUDADIS-IV. Low prevalence estimates of internalising disorders in older adults are unlikely attributable to differences in response patterns to screening items.

1. Introduction

Mental disorders in old age are associated with decreased quality of life and physical health, and increased psychological distress and mortality (Beekman et al., 1998; Blazer, 2003; Doraiswamy et al., 2002; Lenze et al., 2001; Schulz et al., 2002; Wetherell et al., 2004). With an aging population across the world United Nations Department of Economic and Social Affairs (2002), determining accurate prevalence rates of mental disorders in old age is increasingly important for optimising health care services.

Internalising disorders reflect a propensity to experience distress inwards (i.e., unipolar mood and anxiety disorders) and epidemiological studies have provided inconsistent estimates of prevalence rates of these disorders in older adults (Riedel-Heller et al., 2006; Volkert et al., 2013). However, one finding that is commonly reported is that prevalence is significantly lower in older adults than in middle and younger age groups (Jorm, 2000; Kessler et al., 2010a, 2010b; McEvoy et al., 2011; Trollor et al., 2007).

There is considerable debate in the literature over whether lower prevalence of internalising disorders in old age reflects true effects in the population or methodological errors. Symptoms of internalising disorders may in fact decline in old age due to protective psychological factors that develop as people age, such as increased emotional control, better adaptive coping strategies, and decreased emotional responsiveness (Blazer and Hybels, 2005; Ernst and Angst, 1995; Henderson et al., 1998; Jorm, 2000). Conversely, diagnostic criteria and the manner in which they are operationalised in fully structured lay-administered instruments may be biased against older adults, leading to inaccurate case ascertainment in epidemiological studies (Gallo et al., 1994; Henderson et al., 1998; O'Connor and Parslow, 2009).

Indeed, a study of the Composite International Diagnostic Interview (CIDI) depression screening items in an Australian national survey found that older adults (65+ years) were significantly less

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likely to endorse the screening items than younger adults O'Connor and Parslow (2010a). Further, these age group differences were larger for the screening items than for diagnostic items in the full assessment, which tend to be shorter and simpler. O'Connor and Parslow (2010a) suggest that the lower rate of item endorsement by older adults may be due to the relatively high cognitive demand required by the CIDI screening items. Respondents who have symptoms who can manage the screening questions may then also be able to respond accurately to the full diagnostic questions. This is supported by a previous study that compared responses to the CIDI screening items with the Kessler Psychological Distress Scale (K-10; Kessler et al., 2003), which has shorter and simpler items. It was found that disagreements between corresponding CIDI and K-10 items significantly increased with age O'Connor and Parslow (2009).

The CIDI screening questions for internalising disorders are relatively complex. Responding to them involves engaging several cognitive processes: attending to multiple components of the questions (e.g., "In the past 12 months, have you had two weeks or longer when nearly every day you felt sad, empty, or depressed for most of the day?"), processing several timeframes in working memory (e.g., "have you ever in your life had a period lasting several days or longer…") and retrieving autobiographical events from long-term memory. Decline in cognitive performance in old age particularly affects processing speed, working memory and episodic memory (Kennedy and Raz, 2009; Salthouse, 1996; Verhaeghen et al., 1993). Thus it is possible that older people are more sensitive to lengthy and complex assessment items and accordingly respond differently than younger people (O'Connor and Parslow, 2009, 2010b). If this is the case then the screening items may be biased toward screening older adults out of the full diagnostic instrument, which could account, at least in part, for findings of lower prevalence rates of internalising disorders in old age.

The current study examined the extent to which methodological characteristics account for lower prevalence estimates of internalising disorders (i.e., unipolar mood and anxiety disorders) in older adults relative to middle-aged and younger adults. Specifically, are the screening questions of internalising disorders, enumerated in fully-structured epidemiological surveys, vulnerable to age-related bias? We examined this question using measurement invariance techniques.

Measurement invariance investigates whether items function equivalently amongst members of different groups (e.g., age, sex, diagnostic group) while accounting for the level of the underlying latent variable of interest. Establishing measurement invariance is thus a prerequisite for conducting meaningful group comparisons; lack of measurement invariance is indicative of systematic differences in response patterns between groups and precludes meaningful group comparisons.

In the context of the current study, measurement non-invariance would indicate that older adults who have the same level of internalising pathology as middle-aged and younger adults have different response patterns to the internalising screening items. In effect, this would suggest that related context-specific factors, such as question item complexity, may be artefactually contributing to the lesser rates of internalising pathology in older adults relative to younger adults. By contrast, if evidence of measurement invariance is found in the current study, this would suggest that older, middle-aged, and younger adults have equivalent response patterns, that group comparisons are meaningful, and, accordingly, that the reported decrease in prevalence of internalising disorders in old age is not attributable to bias in the screening items. As an alternative explanation, measurement error of a different kind (e.g., bias in the content of standardised diagnostic criteria) may account for the lower prevalence estimates or these estimates may in fact be an accurate reflection of mental health in older people. We predicted that measurement invariance would not be identified, based on previous research suggesting older adults may be more sensitive to the cognitive demands of complicated screening questions than younger and middle-aged adults (O'Connor and Parslow, 2009, 2010a).

Measurement invariance is typically tested by specifying and estimating a series of increasingly restricted multi-group confirmatory factor models and examining the change in fit between each model. The advantage of using this technique over simpler factor analyses is that it allows for direct comparisons of response patterns between the age groups: significant differences between models reflect systematic differences in the responses groups, or measurement non-invariance (Muthén and Asparouhov, 2002; van de Schoot et al., 2012). This study draws on data from three surveys: the 1997 and 2007 Australian National Survey of Mental Health and Wellbeing (NSMHWB), and the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). Each of these surveys is based on a different diagnostic interview (see Section 2 for further details), which provides a unique opportunity for investigating potential age-related bias and establishing that the results are robust.

2. Method

2.1. Sample

Data were drawn from three epidemiological surveys in the United States and Australia: the 1997 and 2007 Australian National Surveys of Mental Health and Wellbeing (NSMHWB), and the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). All three surveys contained structured diagnostic interviews that were conducted face-to-face by trained lay-interviewers. The 1997 NSMHWB surveyed 10,641 community residents (78% response rate) using a stratified, multi-stage area probability sample of private households across urban and rural Australia. One resident aged 18 years or older was randomly selected from each household to participate in the interview. The sample excluded institutions (e.g., aged care facilities and jails) as well as very remote or difficult to access regions of the country. The 2007 NSMHWB followed the same stratified sampling procedure as the 1997 survey and had 8841 respondents (60% response rate). In the 2007 survey, the age range for interview participants was 16–85 years. As the youngest and oldest ages tend to be underrepresented using this procedure, the 2007 survey oversampled the youngest (16–24 years) and oldest (65–85 years) age groups to ensure reliable estimates. The 2001–2002 NESARC surveyed 43,093 non-institutional community residents (response rate 81%) in the US from a multi-stage stratified sample. Participants were aged 18 years and older, with young adults (18–24 years) oversampled to ensure sufficient representation of the youngest age group. The sampling frame was derived from US census data and included group-quarters sampling. Further information on the survey procedures and analyses of participant characteristics are described in previous studies (for further details on the 1997 and 2007 NSMHWB and NESARC, respectively, see Andrews et al., 2001; Slade et al., 2009; Grant et al., 2006). Data in each survey were weighted according to demographic distributions in the general population based on national census data. For this study, participants were categorised into three age groups: older adults (65 years and older), middle-aged (35–64 years) and younger adults (16–34 years). The number of participants across age groups and surveys are shown in Table 2.

2.2. Measures

The 1997 NSMHWB contained the Composite International Diagnostic Interview version 2.1 (CIDI 2.1), the 2007 NSHMWB was based on the CIDI World Mental Health version (WMH-CIDI),