Distress in old age: the contribution of lifetime trauma exposure, emotion regulation, social group identifications and socioeconomic deprivation

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Introduction

With the ageing population, older adults are becoming a growing proportion of people utilising mental health services (Böttche, Kuwert & Knaevelsrud, 2011). For services to be able to effectively address the needs of this population, it is important to understand how older people are affected by mental health problems. Emerging evidence suggests that mental health conditions manifest themselves differently in old age but little research has been done on this topic to date (Lapp, Agbokou & Ferreri,, 2011). One of those conditions is Post Traumatic Stress Disorder (PTSD) which is characterised by marked psychological distress and changes in mood, cognition and behaviour following an exposure to a life threatening event (Hiskey, Luckie, Davies, & Brewin, 2008). The main diagnostic features of this disorder include repeated re-experiences of the traumatic event in the form of intrusive thoughts, flashbacks and nightmares, as well as avoidance of trauma-related reminders and increased arousal, as indicated by irritability, hypervigilance and sleeping difficulties (American Psychiatric Association, 2013).

Around three in four older adults report exposure to at least one traumatic event (Frans, Rimmö, Åberg & Fredrikson, 2005) with estimated PTSD prevalence rates ranging from 1.7% for current PTSD and 2.5% for lifetime PTSD (Volkert, Schulz, Härter, Wlodarczyk & Andreas, 2013). For those older adults who do not meet the full PTSD diagnostic criteria, a six-month prevalence for subthreshold symptoms has been reported to be around 13% (van Zelst, et al., 2003). However, it is important to note that most epidemiological studies have not investigated the prevalence rates of PTSD in older adult population (Lapp et al., 2011). Since older individuals tend to present with less objective arousal (Neiss, Leigland, Carlson & Janowsky, 2009) and may not disclose experienced trauma (Cook & Simiola, 2017), the diagnosis of PTSD is likely to be missed by clinicians.

PTSD in old age has been associated with an increased risk of health conditions, such as coronary heart disease (Kubzansky, et al., 2007), and multiple psychiatric co-morbidities, including depression and anxiety (Spitzer et al., 2008). Older individuals with PTSD symptoms have reported significant impairments in daily functioning, greater health problems, less satisfaction with life and their quality of care (van Zelst, et al., 2006; Solomon, Helvitz & Zerach, 2009). Despite the serious consequences, PTSD symptoms in older adult population are underreported or misperceived as a somatic illness or part of an ageing process (van Zelst et al., 2003).

Various hypotheses have been put forward to explain the onset of PTSD in old age, such as age-related stressors or reduced physical and mental resilience (Lapp et al., 2011). Stressful changes associated with old age, such as bereavement (Elklit & O'Connor, 2005), physical illness (Macleod, 1994; Chung et al., 2008; 2009), retirement (Port, Engdahl, & Frazier, 2001) and cognitive decline (Hiskey, Luckie, Davies, & Brewin, 2009), have been associated with PTSD and greater symptom severity (Yehuda, et al., 1995). In addition, there is accumulating evidence that PTSD in old age can stem from earlier trauma and may present with delayed onset after years of experiencing no or minimal symptoms (Lapp et al., 2011). Prior exposure to trauma could increase the individual's susceptibility to the effects of subsequent stressful events (Solomon & Ginzburg, 1998). Low grade life stressors or exposure to a traumatic event have been shown to trigger PTSD in older adults with previous trauma history (Boe, Holgersen & Holen, 2010). In a community sample of older people, greater lifetime exposure to trauma has been found to be a stronger predictor of PTSD symptoms than the severity of a single event (Ogle, Rubin & Siegler, 2013). In elderly veterans, delayed onset of PTSD coincided with other stressors, such as the onset of physical illness and mild cognitive impairment (Ruzich, Looi & Robertson, 2005), which suggests a possible interaction between neurodegenerative processes and psycho-social stressors in the emergence of PTSD in old age. Due to age-related decreases in attention and memory, older adults might be able to exert less control over traumatic memories, which could explain the delay in experiencing PTSD symptoms (Floyd, Rice & Black**,** 2002). However, as ageing is an inherently heterogeneous process, establishing a clear relationship between PTSD and old age has been challenging (Lapp et al., 2011).

Typically, individual differences account for more variability in the experience of PTSD than the objective characteristics of traumatic events (Ogle et al., 2013). In younger adults, difficulties in emotion regulation have consistently been shown to be important in predicting PTSD symptoms over time (Seligowski, Lee, Bardeen & Orcutt, 2015). Despite strong evidence base in younger adult population, the impact of emotion regulation on psycho-social outcomes following trauma in older people is unclear. As psychological resources, including emotional stability, allow individuals to find appropriate coping strategies (Walker & Mollenkopf, 2007), emotion regulation strategies are likely to affect how older people cope with trauma.

In one study, individuals who showed greater signs of avoidance after a man-made disaster were at an increased risk of developing PTSD decades later (Boe et al., 2010). As very few participants

described additional traumatic events, study authors concluded that psychological factors might be more important in triggering PTSD in old age than further trauma exposure (Boe et al., 2010). There is evidence that older people tend to rely on suppression as an emotion regulation strategy, however, unlike in younger adults, this has not been associated with higher levels of distress (Brummer, Stopa & Bucks, 2014). In one study, distraction-based strategies were favoured by older adults and predicted better emotional well-being by facilitating short-term benefits of greater disengagement with aversive materials (Scheibe, Sheppes & Staudinger, 2015). Additionally, previous research indicated that, with greater lifetime stress, older adults rely more on avoidance and withdrawal to regulate their emotions (Yehuda et al., 1997). However, other studies have found a general reduction in using emotion regulation strategies in old age (Schirda, et al., 2016; Nolen-Hoeksema & Aldao, 2011).

Trauma and adverse life events do not necessarily lead to negative outcomes (Walker & Mollenkopf, 2007). More recently, the role of social context in explaining vulnerability to PTSD has gained increased attention in younger adult populations (Vogt, Erbes & Polusny, 2017). Poor social support following trauma has been identified as one of the strongest risk factors associated with PTSD in two meta-analyses (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). Social support has not been specifically studied in older adults with trauma history, however, the significance of social connections in later life has been widely reported, especially in relation to improved mental and physical well-being, including satisfaction with life, general levels of happiness and self-esteem, as well as physical and cognitive ability (e.g. Glass, De Leon, Bassuk & Berkman, 2006; Golden, Conroy & Lawlor, 2009). Loss of social support has been implied as one of the leading causes of reduced well-being in old age (Hansen & Slagsvold, 2012) and has also been implicated in the emergence of PTSD in older adults (Elklit & O'Connor, 2005; Chung et al., 2008). Recent research has shown that the source of support as well as the quality and size of support network, including its diversity, might be particularly important in the experience of PTSD (Vogt et al., 2017). It has also been suggested that the subjective appraisal of the helpfulness of others is more relevant in the development and course of PTSD than objective measures of social support (Charuvastra & Cloitre, 2008). Since social support is a complex construct and has been variably defined in the literature, more nuanced understanding of different social factors in PTSD is needed (Wagner, Monson & Hart, 2016).

Group identification, defined as a sense of belonging to a specific group (Tajfel & Turner, 1979), may be important in predicting psychological distress since it has been shown to influence the response to social support. Evidence suggests that people are more likely to offer and accept support from in-group members and to interpret this support positively (e.g. Levine, Prosser, Evans, & Reicher, 2005; Haslam, Jetten, O'Brien, & Jacobs, 2004), which may buffer the negative consequences of stressful events (Haslam et al., 2008). Identifying with more than one group will likely maximise those benefits by decreasing the vulnerability to changes in the social group and providing individuals with more sources of support at times of distress (Kawachi & Berkman, 2001). Multiple group membership may be particularly important in later life due to age-related losses affecting social relationships, such as bereavement and retirement; factors associated with PTSD emergence in later life. In a general population, greater number of group identifications was a better predictor of self-reported depressive symptoms than social contact alone (Sani, Madhok, Norbury, Dugard & Wakefield, 2015) and reduced the risk of depression relapse (Cruwys et al., 2013). Similarly, in a primary care sample of individuals receiving computerised cognitive behavioural therapy for depression, individuals who identified with more groups showed lower levels of psychological distress (Cientanni et al., 2017).

There is accumulating evidence that group membership facilitates the adjustment to life transitions, which are associated with PTSD in old age, by counteracting the adverse consequences of those changes. In individuals with multiple sclerosis, stronger identification with a support group was associated with lower levels of psychological distress, including depression and anxiety, as well as greater satisfaction with life (Wakefield, Bickley & Sani, 2013). Following stroke, multiple group membership predicted higher levels of well-being (Haslam et al., 2008). Post-retirement, individuals with more social group memberships reported higher quality of life and showed a reduced likelihood of dying in the first six years of their transition (Steffens, Cruwys, Haslam, Jetten & Haslam, 2016). Given implications for well-being, the impact of group identification on the experienced distress in older adults with trauma history requires further investigation.

Despite the high potential for misdiagnosis and different symptom presentations (Averill & Beck, 2000), research on PTSD in old age is scarce (Volkert et al., 2013). Most studies have recruited Holocaust survivors, combat veterans and former prisoners of war which could potentially affect the generalisability of current findings (Lapp et al., 2011). Given that PTSD is a significant issue for

older people, it is important to gain a better understanding of how it is manifested in this population. There is emerging evidence that age-related stressors, such as bereavement and physical illness, are associated with PTSD in older adults (e.g. Hiskey, et al., 2009). Personal resources, such as emotion regulation and belonging to social groups, are thought to be crucial in adjusting to adversities (Walker & Mollenkopf, 2007). To our knowledge, only one study to date investigated the role of emotion regulation in the emergence of PTSD in older people and found that lifetime trauma exposure was associated with symptoms of PTSD in old age, and that this relationship was partially influenced by difficulties in emotion regulation (McCluskey, 2015; unpublished doctoral dissertation). This study study will aim to extend those findings by additionally exploring the impact of socioeconomic deprivation on psychological distress in old age as exposure to traumatic events is more prevalent in disadvantaged populations (Heilemann, Kury & Lee, 2005).

Due to high heterogeneity and complex health trajectories within the older adult population, gaining a better understanding of factors influencing a response to trauma in old age is essential for effective psychological treatments. The present study aims to address the gap in literature by exploring the importance of interpersonal and intra-individual factors, including lifetime trauma exposure, emotion regulation, group identification and socioeconomic deprivation, in predicting psychological distress in older adults. To avoid problems of misdiagnosis and underreporting of PTSD in old age, the current study will recruit individuals with anxiety and depression since these disorders are highly prevalent within the older adult population (Andreas et al., 2016). The reported number of traumatic events is therefore likely to vary as diagnosis of PTSD will be desirable but not essential. In line with previous research (e.g. Ogle, et al., 2013), we hypothesise that older adults with greater lifetime exposure to trauma will show more symptoms of depression, anxiety and PTSD. In line with findings from younger adult populations population (e.g. Seligowski et al., 2015, Cientanni et al., 2017, Heilemann et al., 2005), we hypothesise that greater difficulties in emotion regulation, lower number of group identifications and higher levels of socioeconomic deprivation will predict higher psychological distress in older adults.

Hypotheses

Principal research questions

(1) Greater lifetime trauma exposure will predict higher levels of psychological distress (depression, anxiety, PTSD symptoms) in older adults.
(2) Greater difficulties in emotion regulation will predict higher levels of psychological distress (depression, anxiety, PTSD symptoms) in older adults.
(3) Lower number of group identifications will predict higher levels of psychological distress (depression, anxiety, PTSD symptoms) in older adults.
(4) Higher levels of socioeconomic deprivation will predict higher levels of psychological distress (depression, anxiety, PTSD symptoms) in older adults.

Secondary research questions

(1) What is the relative contribution of lifetime trauma exposure in predicting levels of psychological distress (depression, anxiety, PTSD symptoms) in older adults?
(2) What is the relative contribution of difficulties in emotion regulation in predicting levels of psychological distress (depression, anxiety, PTSD symptoms) in older adults?
(3) What is the relative contribution of group identifications in predicting levels of psychological distress (depression, anxiety, PTSD symptoms) in older adults?
(4) What is the relative contribution of socioeconomic deprivation in predicting levels of psychological distress (depression, anxiety, PTSD symptoms) in older adults?

Methods

Recruitment

An opportunistic sample of 85 patients will be recruited from the Older People Psychological Therapies Service in NHS Tayside.

Power Calculations

A priori power calculations carried out using G*Power 3.1 (Faul, Erdfelder, Lang & Buchner, 2007) estimated that 85 participants were needed in order to detect a medium effect size, using linear regression with four predictors at an alpha level of .05 ($p<.05$) and a power of .80.

Eligibility criteria

Inclusion criteria

- Aged 65 years and over
- In receipt of psychological treatment for PTSD, anxiety or depression
- Fluent English speaker
- Ability to give consent

Exclusion criteria

- Cognitive impairment (MoCA ≤20)
- Under investigation for or a confirmed diagnosis of dementia
- Currently experiencing an episode of a serious mental illness, e.g. psychosis
- Ongoing substance misuse
- Ongoing serious risk issues (i.e. risk of harm to self and others, suicidality)

Identification of participants

Eligible participants will be identified by Clinical Psychologists working in the Older People Psychological Therapies Service in NHS Tayside. Clinicians will receive the study inclusion and exclusion criteria to help them identify suitable participants from their caseload. Clinicians will also be provided with the study information sheet which they will be asked to discuss with identified individuals. All potential participants will be screened by their referring agents to ensure that patients not meeting the study criteria are excluded. Suitable patients who express interest in the study will be given the study participation sheet to keep for future reference and will be asked to give consent to be contacted by the researcher. If no issues are identified, the researcher will then contact potential participants via their preferred method of contact (i.e. telephone or letter) to briefly explain the study, check their willingness to participate and answer any questions. To fully consider their participation, the researcher will aim to give potential participants at least 48 hours from the moment they were approached by the referring agent before contacting them via their preferred method.

Patient interview and consenting procedure

In the telephone conversation or in writing, potential participants will be told that they are being invited to take part in a research project about the impact of stressful life events on experiences of

distress in old age. They will be informed that, should they wish to participate, they will be asked to answer some questions about their thinking, life experiences, emotions, mood and well-being. Potential participants will be advised that, as part of the study, they will also be asked to provide general demographic information regarding their age, gender, marital status, academic achievement, employment status, psychiatric or psychological treatment, medication, the duration of their current episode of mental illness, geographical area, and GP details.

Patients who wish to take part in the study will then arrange a mutually convenient time and place for the completion of relevant study forms and measures. In line with the current model of care operating within NHS Tayside, preferably, all participants will meet the researchers at the same location where they attend for appointments with their referring agent. Patients will be informed that the appointment will last approximately 45 minutes. The completion of study questionnaires should take no more than 35 minutes, however, additional time will be allowed for signing the consent form and offering participants the opportunity to provide feedback or ask questions about the study at the end of their appointment.

During the consenting procedure, the researcher will tell participants that they can withdraw from the study at any time if they do not want to continue. They will be reassured that this will not affect their care in any way and that they are not required to give a reason for their withdrawal. The participants will also be offered the opportunity to receive written feedback about the study results by post once these are available. They will indicate their preference on the consent sheet in a yes/no format.

Initially participants will be screened for mild cognitive impairment using a brief screening tool. If their scores fall below a threshold (i.e. MoCA $\leq$20), they will be automatically excluded from the study and will not be asked to complete the remaining questionnaires. Each participant will receive a brief written note with their MoCA score, indicating whether they had met the study inclusion criteria and explaining that further feedback should be sought from their respective clinician as agreed with the service (contact details will be provided). The referring agent will then be informed in writing whether or not the participant was included in the study and what their MoCA score was. This will ensure that the patients who are excluded can be offered an appropriate follow-up appointment. This will be explained to participants as part of the consenting procedure.

Throughout the assessment process, the researcher will monitor participants for any signs of discomfort or distress associated with their study participation and will encourage comfort breaks as required as well as remind individuals about their right to withdrawal at any point of the study process. At the end of the study, participants will be asked whether they have any questions about the study and will have the opportunity to provide their feedback.

Procedure

A total of 85 patients in receipt of psychological treatment for PTSD, anxiety or depression in the Older People Psychological Therapies Service in NHS Tayside will be assessed individually in a clinic space. Selected measures were chosen with an intention of reducing unnecessary participation burden. The following procedure is estimated to take around 35 minutes in total. The questionnaires will be administered to participants once only.

The procedure will include the following:

1) The Demographic form which was developed by the research team. The form collects basic demographic information, including the participant's age, gender, marital status, academic achievement, employment status, previous outpatient or inpatient psychological or psychiatric treatment, duration of the current episode of depression, anxiety or PTSD, use of medication, and postcode. Completion time: 1 minute.

2) The Montreal Cognitive Assessment (MoCA; Nasreddine, Phillips, Bedirian, Charbonneau, Whitehead, et al., 2005) which briefly screens for mild cognitive impairment (MCI) by assessing several cognitive domains, including (1) attention, (2) executive function, (3) memory and (4) orientation, with a maximum score of 30. The MoCa has been translated to multiple languages and has been widely used in clinical practice (Appels & Scherder, 2010). It has demonstrated sound psychometric properties, with a good internal consistency (α=.83), and better sensitivity and specificity for detecting MCI than other commonly used screening measures (Nasreddine et al., 2005). Compared to other screening tools, the MoCA has also been shown to better predict dementia in the longer term (Smith, Gildeh & Holmes, 2007). A cut-off score of $\leq$20 has been recommended to optimise its sensitivity and specificity for detection of MCI in older adults (Waldron-Perrine & Axelrod, 2012). Completion time: 10 minutes.

3) The Trauma History Questionnaire (THQ; Green, 1996) which measures lifetime exposure to a range of potentially traumatic experiences in three broad areas of (1) crime-related events, (2) general trauma and disasters, as well as (3) unwanted sexual experiences and physical violence. Participants will be required to answer 24 items in a yes/no format and indicate the frequency and age of onset for each experienced event. The THQ was developed to be applicable to various populations and has been widely used in research (Hooper, Stockton, Krupnick & Green, 2011). In a recent review of studies employing this measure, the THQ demonstrated sound psychometric properties, including a good interrater reliability and construct validity (Hooper et al., 2011). Completion time: 5 minutes.

4) The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) which measures six aspects of emotion regulation, including (1) acceptance of emotional responses, (2) engagement in goal-directed behaviours, (3) impulse control, (4) emotional awareness, (5) access to emotion regulation strategies and (6) emotional clarity. Participants will be required to answer 36 items by indicating the frequency of each item on a 5-point scale ranging from 1=*'almost never'* to 5=*'almost always'*. Higher scores indicate greater difficulties in emotion regulation. The DERS demonstrated a good internal consistency (α=.80-.89) and acceptable validity (Gratz & Roemer, 2004). Orgeta (2009) reported that this measure is suitable for use with older adults. Completion time: 8 minutes.

5) The Civilian Version of the PTSD Checklist (PCL-C; Weathers, Litz, Huska & Keane, 1994) which measures PTSD symptoms in the civilian population. Participants will be required to answer 17 items by rating the intensity of their symptoms on a 5-point scale ranging from 1=*'not at all'* to 5=*'extremely'.* Higher scores indicate greater symptom severity. The PCL-C demonstrated a high internal consistency (α=.87-.94), good test-retest reliability and positive correlations with other widely used PTSD scales (Ruggiero, Del Ben, Scotti & Rabalais, 2003). Cook, Elhai and Arean (2005) reported that this measure is suitable for use with older adults and recommended a cut-off score of 37 to reliably diagnose PTSD in this population. Completion time: 5 minutes.

6) The Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) which measures symptoms of depression and anxiety on two 7-item subscales. Participants will be

required to answer the total of 14 items by rating their symptom severity on a 4-point scale ranging from 0=*'not at all'* to 3=*'most of the time'*. Higher scores indicate greater symptom severity. The HADS has been widely used in research with older adults and demonstrated a good internal consistency (α=.75-.84) and test-retest reliability (Roberts, Fletcher & Merrick, 2014; Spinhoven et al., 1997). This scale is suitable for the assessment of symptom severity, however, appropriate cut-off scores have yet to be determined in the older adult population (Robert et al., 2014). Completion time: 2 minutes.

7) The Group Identification Scale (GIS; Sani et al., 2012) which measures identification with three groups (i.e. family, community and a social group chosen by the participant from the list provided, e.g. a group of friends, a voluntary group or a sports group). Identification with each group is measured with four items, encompassing a general sense of belonging and commonality with in-group members. The items are rated on a 7-point scale ranging from 1=*'strongly disagree'* to 7=*'strongly agree'*. The cut-off score for group identification is 20, hence individuals scoring ≥20 will be considered as identifying with the given group. The GIS demonstrated a good internal reliability (α=.85-.92) and construct validity (Sani et al., 2015). Completion time: 2 minutes.

8) The Scottish Index of Multiple Deprivation (SIMD; Scottish Executive, 2016) which measures socioeconomic deprivation according to postcode information. Each postcode has a designated value between 1 and 10, where 1 indicates the least deprived and 10 indicates the most deprived households. Completion time: none; completed by the researcher.

The full procedure is summarised in Appendix 1.

Analysis

IBM SPSS Statistics Version 24 or equivalent will be used to analyse the data. All data will be assessed for normality using the Shapiro-Wilk test. Independent t-tests for parametric data or Mann-Whitney U tests for non-parametric data will be used for pairwise comparisons to test for gender and the developmental timing of trauma exposure (childhood, adulthood and old age) as co-variates. Statistical significance is taken as a two-sided p value of <.05.

Group characteristics

The group characteristics will firstly be reported. The proportion of male and female participants will be calculated together with means and standard deviations for age, years of education and the duration of the current episode of depression or anxiety. Additional descriptive statistics will be calculated in percentages for discrete demographic variables, including martial status ('married', 'separated/divorced', 'widowed', 'never married), employment status ('working', 'retired', 'volunteering', 'never worked'), and area of deprivation (as indicated by the Scottish Index of Multiple Deprivation). The proportion of participants who have received previous outpatient or inpatient psychological or psychiatric treatment as well as those who have been prescribed anti-depressant medication will also be reported. Means and standard deviations will be calculated for quantitative variables, including the brief cognitive screen (MoCA score), lifetime trauma exposure (THQ score), emotion regulation (DERS score), PTSD symptoms (PCL-C score), as well as symptoms of anxiety and depression (HADS score). The proportion of participants for each number of group identifications (ranging from 0-3) will also be reported.

The nature of trauma exposure

The data relating to the nature of lifetime trauma exposure will be of particular interest. The mean number of traumatic experiences will be calculated, together with the mean age of trauma encounter. The frequency of different types of traumas will also be reported and split into childhood trauma (>18 years of age), adult trauma (18-64 years of age) and trauma in old age (≤65 years of age).

Predictor variables and psychological distress

Correlations will be calculated to answer the principal research questions on whether lifetime trauma exposure, emotion regulation, number of group identifications and socioeconomic deprivation are associated with psychological distress. The Pearson product correlation coefficient for parametric data or the Spearman's rank correlation coefficient for non-parametric data will be used to explore the strength of the relationship between the predictor variables (i.e. lifetime trauma exposure, emotion regulation, number of group identifications and socioeconomic deprivation) and scores on anxiety, depression and PTSD measures. The absolute value of the correlation coefficient will be taken to represent the following effect sizes: small for values >0.3, medium for values between 0.3-0.5 and large for values <0.5 (Cohen, 1988). Only variables that significantly correlate

with the outcome variables will be included in subsequent regression analyses to answer secondary research questions.

To test the relative strength of each hypothesised variable (i.e. lifetime trauma exposure, emotion regulation, number of group identifications and socioeconomic deprivation) in predicting symptoms of distress (i.e. anxiety, depression and PTSD), a simultaneous forced entry linear regression model will be calculated for each outcome variable, yielding three models in total. The forced entry method allows to test the individual exploratory power of each hypothesised variable whilst controlling for other variables in the equation. This is a preferred method for making predictions for new models since it allows to weigh the relative contribution of each variable without making prior assumptions regarding their importance (Field, 2003).

Application

Accumulating evidence suggests that mental health conditions are manifested differently in old age (Lapp et al., 2011), however, the needs of this population are poorly understood, despite older people becoming a growing proportion of individuals utilising mental health services (Böttche et al., 2011). Distress in old age has been shown to be related to previous trauma (Boe et al., 2010). The vast majority of older people have encountered at least one traumatic event in their lives (Frans et al., 2005), however, it is not clear how PTSD is triggered in this population. Previous studies have shown that personal resources, such as emotional stability and social support, might help individuals adapt to adverse life circumstances (e.g. Seligowski et al., 2015; Haslam et al., 2008), potentially buffering the effects of trauma. Other factors, such as socioeconomic deprivation, are likely to affect the individual's chances of developing PTSD as previous research has indicated that disadvantaged populations are exposed to more traumatic events (Heilemann et al., 2005). Since the role of these factors on the PTSD presentation in old age has not been investigated, the present study aims to expand our current understanding of distress in older adult population.

Given its serious and adverse consequences, the importance of improving detection rates of PTSD in older adults should be recognised. Findings from this study might encourage qualified professionals in older people's services to place more importance on taking trauma history as part of their assessment process and on recognising different PTSD presentations in old age to minimise the potential for mis-diagnosis and underreporting of this disorder. It can further contribute to the

development of more effective treatment strategies for PTSD by, for example, increasing the focus of an intervention on emotion regulation strategies or encouraging social group participation. Lastly, as research in this population is scarce, it is hoped that the current study will inspire future projects which will continue to add to the current evidence base and to the efforts of raising awareness of the impact of traumatic experiences in old age.

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Appendix 1: Outline of Recruitment Procedure