International Psychogeriatrics (2024), 36:2, 83–85 © The Author(s), 2022. Published by Cambridge University Press on behalf of International Psychogeriatric Association
doi:10.1017/S1041610222000461

COMMENTARY

When aging and trauma intersect

Commentary on "Reciprocal Associations of Posttraumatic Stress Symptoms and Cognitive Decline in Community-Dwelling Older Adults: The Mediating role of Depression" by Cohn-Schwartz *et al.*

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Traumatic experiences can affect most facets of one's functioning, and posttraumatic repercussions often echo in one's thoughts, memory, and awareness. Thus, posttraumatic stress disorder (PTSD) symptoms and cognitive functioning are closely intertwined, and posttraumatic sequelae have been known to involve cognitive declines in the second half of life (Lynch and Lachman, 2020). Several studies have addressed this link, yet a lot remains to be uncovered regarding its exact nature. The current paper by Cohn-Schwartz et al., (2022) therefore addresses a crucial question, regarding the long-term connections between PTSD symptoms, cognitive functioning, and the mediating role of depressive symptoms. While PTSD symptoms are one of the most dominant outcomes of trauma, depression is also common among traumatized older adults, and it is highly comorbid with PTSD symptoms (Flory and Yehuda, 2015). Depression is also highly connected with cognitive decline among older adults (Manning and Steffens, 2018), and therefore, its inclusion in the present study was indeed warranted.

Based on data drawn from interviews with 1792 participants in the third (2013) and fourth (2015) waves of the Israeli portion of the SHARE study, Cohn-Schwartz et al. present results suggesting that PTSD symptoms at baseline predict cognitive functioning, but not vice versa, and that this connection is partly mediated by depressive symptoms. The authors conclude that PTSD symptoms, especially when depressive symptoms are also present, are involved with cognitive impairment among older adults. These are important results that aid in settling long-held questions for gerontologists and health care professionals working with older adults, concerning the nature of the links between outcomes of trauma with cognitive functioning. Primarily, they underscore the pivotal role played by PTSD symptoms in eroding one's cognitive functioning. Furthermore, there is an applied clinical message, that depressive symptoms play a unique role over time and that those suffering from comorbid depressive symptoms are particularly susceptible to the negative outcomes of PTSD symptoms in terms of their cognitive functioning.

Previous prospective studies that have examined trajectories of cognitive functioning and their concomitants among older adults have revealed divergent paths of decline (Tu *et al.*, 2020). Studies focusing on psychopathology that stems from traumatic experiences further increase our understanding of these divergent paths over time, yet findings are not always consistent. In a recent study, PTSD symptoms were linked with worse cognitive functioning only among some groups of older adults (of Asian descent) but not others (Saadi *et al.*, 2021). In another study,

Karstens *et al.* (2017) did show that previous traumatic experiences were associated with worse cognitive functioning among older adults, yet they did not find the same association regarding depression and cognitive functioning. The present study adds to this knowledge by including a group of participants who report having been exposed to trauma and suffer both from significant levels of depressive symptoms, as well as PTSD symptoms. This echoes previous findings that relate to the mediating role played by depression in the links between PTSD symptoms and cognitive functioning (Olff *et al.*, 2014), and helps in pointing to those who are particularly susceptible to suffer from cognitive decline – older adults who suffer from PTSD, as well as depression.

Hopefully, these results will help to facilitate timely detection and treatment, as older adults suffering from PTSD and depressive symptoms are often inadequately diagnosed and treated. Moreover, these findings can serve as a stepping stone for further studies delving into the question of

posttraumatic outcomes and cognitive functioning, some of which I present here.

The first issue relates to the question of the type of trauma and subsequent psychopathology. The present study assessed the rather specific form of war-related trauma. While potentially traumatic in the long run (i.e. Castro-Vale *et al.*, 2019), this is a distinctive form of traumatic exposure and it may have narrowed the breadth of potentially traumatic experiences that affect individuals into late life. The trauma literature, for instance, points to the deleterious long-term effects of traumas with more clearly defined chronic and interpersonal attributes, such as intimate partner violence, or sexual assault (Lahav *et al.*, 2019). These forms of traumatic exposures pose a higher risk for developing PTSD (Brewin *et al.*, 2000). At times termed complex PTSD, the outcomes of some forms of complex interpersonal traumas have been shown to alter mental processes such as self-perceptions and self-regulation, and it stands to reason that it would be closely intertwined with memory, concentration, and other facets of cognition (Karatzias and Cloitre, 2019). It has been recently reported, for instance, that Holocaust survivors with coronary heart disease revealed poorer cognitive performance with participants who were not Holocaust survivors (Weinstein *et al.*, 2021). Beyond complex PTSD, it may be interesting to assess for a wider range of traumas, as this will undoubtedly represent more potential for understanding negative connections with cognitive functioning.

In the same vein, the present findings were based on assessments of PTSD symptoms with a brief assessment tool (the four-item PTSD SPAN; Meltzer-Brody, *et al.*, 1999). Although psychometrically sound, this does not tap into the full scope of symptoms of the different clusters of PTSD as outlined in the last version of the diagnostic and statistical manual (DSM-5; American Psychiatric Association, 2013). Such measures based on the DSM-5 have been tested and validated among cohorts of older adults (i.e. Palgi, 2015). These include symptoms of intrusion (nightmares, flashbacks); avoidance (of places or thoughts that relate to the trauma); hyperarousal (problems with sleep, trouble concentrating and remembering); and negative affective states (such as dissociation). Such issues are obviously related to cognitive decline, as poor sleep, trouble remembering, avoidance (often cognitive and not just behavioral), and dissociation, for example, are cognitive manifestations or can lead to cognitive problems (i.e. Aloni *et al.*, 2021).

Furthermore, in the present study, the authors suggest that challenges related to old age (namely, cognitive decline) and PTSD symptoms interact negatively, probably due to the mental and physical toll of trauma-related wear and tear processes. This reflects ideas that have been demonstrated in previous studies (i.e. Solomon *et al.*, 2017), suggesting that it is the constant burden, or allostatic load, involved in PTSD that paves the way for cognitive decline. This notion is part of the larger issue of trauma as an accelerator of aging (Jakel, 2018). Although Cohn-Schwartz et al. did not specifically measure biomarkers of allostatic load, they do suggest that it could play a role in their findings that PTSD symptoms predict cognitive functioning and not vice versa. Assessing PTSD with measures that conform more fully to DSM-5 symptoms of PTSD can unlock a wider variance related to the disturbance, as well as to the burden of allostatic load. It could also lead to a richer understanding of the interplay between PTSD symptoms and cognitive decline.

Other interesting questions arise when thinking about the participants in the present study. While large-scale data yielded from community-dwelling older adults have some merits, it would also be interesting to examine clinical groups (some of whom were excluded from the present study). One possibility would be those who have been diagnosed with clinical levels of PTSD. As noted above, significant levels of PTSD involve a wider disturbance to one's functioning and could perhaps reveal interesting long-term associations with pre-existing problems of cognitive functioning. Another option would be to prospectively assess those suffering from clinical levels of cognitive decline, such as those in the early stages of dementia. This is important as it could help to determine how the progressive cognitive impairment involved in dementia might predict a worsening in the clinical features of PTSD, and not only the reverse path, of cognitive declines being predicted by PTSD symptoms. This has been suggested as a possible outcome, termed "dementia-molded survival" by Palgi et al., in their overview of developmental trajectories of traumatized older adults (2015). Focusing on trauma-related sequelae among people diagnosed with clinical levels of cognitive symptoms, at different stages of neurological disorders, could also inform us regarding the most appropriate timing for interventions among these individuals, aimed at preserving cognitive functioning as well as ameliorating PTSD and depressive symptoms.

The present study revealed significant paths from PTSD symptoms to cognitive decline over time, partly explained by depressive symptoms. This is in line with previous studies that have detected similar paths and as such contributes to extant knowledge in the field. It is quite possible, however, that more remains to be seen regarding the more precarious

https://doi.org/10.1017/S1041610222000461 Published online by Cambridge University Press

reverse path from cognitive decline as a predictor or an exacerbator of PTSD symptoms. The external stressor that is a traumatic event (or events, plural) is more easily conceived of as a predictor of subsequent sequelae, with an ostensibly clear starting point that might lead to losses. However, it may well be that for older adults, cognitive decline (whether due to clinical stages of dementia, or normative, age-related decline) is a unique vulnerability factor that might exacerbate PTSD symptoms. Future studies that take into account diverse types of traumatic exposure, the full clinical picture of PTSD symptoms, and samples based on older adults coping with dementia and/or clinical levels of PTSD could offer a more nuanced reflection on the ideas that stem from the present work.

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