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The effects of adult depression on the recollection of adverse childhood experiences

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ABSTRACT

Adverse childhood experiences (ACEs) have been linked to numerous negative physical and mental health outcomes across the lifespan. As such, self-report questionnaires that assess for ACEs are increasingly used in healthcare settings. However, previous research has generated some concern over the reliability of retrospective reports of childhood adversity, and it has been proposed that symptoms of depression may increase recall of negative memories. To investigate the stability of ACE scores over time and whether they are influenced by symptoms of depression, we recruited 284 participants (M *age* = 40.96, $SD = 16.05$) from primary care clinics. Participants completed self-report measures of depression and ACEs twice, three months apart. The test-retest reliability of ACEs was very high ($r = .91$, $p < .001$). A cross-lagged panel analysis indicated that PHQ-9 scores at Time 1 were not predictive of changes in ACE scores at Time 2 ($\beta = 0.00$, $p = .96$). Results of this study indicate that changes in symptoms of depression do not correspond with changes in ACE scores among adults. This study provides support for the stability and reliability of ACE scores over time, regardless of depression status, and suggests that ACE measures are appropriate for use in healthcare settings.

1. Introduction

1.1. Adverse childhood experiences

In 1998, Felitti and colleagues published a seminal paper on adverse childhood experiences (ACEs) and their relationship with many different mental and physical health outcomes. The authors recruited 8506 patients from the Kaiser Permanente Health Appraisal Clinic in California who completed a comprehensive health appraisal and a retrospective self-report survey on ACEs (an early version of the ACE Questionnaire (ACE-Q); Felitti et al., 1998). The authors grouped experiences of childhood adversity into seven categories: psychological abuse, physical abuse, contact sexual abuse, household substance abuse, household mental illnesses, domestic violence, and household criminal behavior. Respondents who answered "yes" to at least one question in a category were given an ACE score; all ACE scores were then added to a final ACE score out of seven. Results of this study indicated a clear dose-response relationship between ACE scores and the likelihood of developing a range of negative health problems across the lifespan, including depression, alcoholism, substance addiction, heart attack, cancer, stroke, diabetes, and more (Felitti et al., 1998). The ACE-Q has since been used by many researchers to further evaluate the effects of ACEs on a range of adult outcomes, and ACE scores are

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increasingly used in healthcare settings as a way to screen for high risk patients and offer preventative treatment (see Murphy et al., 2016; Finkelhor, 2017).

1.2. Reliability of retrospective memory reports and ACE scores

One of the primary concerns with ACE-related research is that studies rely on retrospective self-report of childhood events. Several issues with retrospective self-report surveys have been identified, including response biases (e.g., social desirability, acquiescence), confounding effects of current psychosocial and physical health and demographic variables, and memory recall problems (e.g. Henry, Moffitt, Caspi, Langley, & Silva, 1994; Offer, Kaiz, Howard, & Bennett, 2000; White, Widom, & Chen, 2007; Widom, Raphael, & DuMont, 2004; Yarrow, Campbell, & Burton, 1970).

Several studies have reported that a considerable number of adults misremember instances of adverse childhood experiences. One study interviewed 129 adult women who had previously participated in a study of sexually abused children aged 12 years and under (Williams, 1994). These children had medical records of the abuse and had been interviewed by the researchers when the abuse was reported. When participants were interviewed 17 years later, 38% reported that they did not remember the childhood sexual abuse and, of those who did remember the abuse, 16% reported periods in their life where they had no memory of the abuse. In their 2004 literature review, Hardt and Rutter (2004) provide further support for the notion that adults tend to underestimate experiences of abuse by reporting that approximately one-third of adults do not recall abuse that had been reported and well-documented in childhood.

A number of prospective studies have assessed the reliability of self-report ACE measures. Reuben et al. (2016) compared prospective and retrospective reports of childhood adversity among a sample of 1037 adults who participated in a large longitudinal study of health in New Zealand. Prospective ACE scores were estimated from various assessments and reports that had been completed between participants' ages of 3 and 15 years. These reports included notes from interviews conducted with participants and their parents, and notes from social service workers, nurses, pediatricians, and teachers who had interacted with and/or observed the participants and their environments. When participants were approximately 38 years of age, retrospective reports of ACEs were assessed via the Childhood Trauma Questionnaire (Bernstein et al., 1994). The correlation between retrospective and prospective total ACE scores was only moderate, $r = 0.47$. In another study, Fergusson, Horwood, and Woodward (2000) examined data from a longitudinal study of 1265 New Zealand residents who were asked about various ACEs at age 18 and again at age 21 during a structured interview. During this interview, participants were asked about childhood sexual and physical abuse, and childhood psychiatric disorders and symptoms. They reported the test-retest reliability for this time period as $\kappa = 0.45$, indicating only a moderate level of agreement. The authors also reported that about 50% of participants who reported abuse at age 18 did not report the abuse again at age 21, and that about 50% of participants who reported abuse at age 21 had not reported the abuse at age 18.

Collectively, these studies highlight potential issues with the measurement of ACEs. Given that ACEs are defined as experiences that occur prior to 18 years of age, ACE scores would be expected to remain stable throughout adult life. Indeed, much ACE-related research and treatment initiatives are predicated on the idea that self-reported ACEs among adults are reliable and stable. However, if inaccurate recollection of childhood adversities is relatively common, this assumption of stability may be incorrect. One factor that could potentially affect the reliability of retrospective reports of ACEs is adult mood, particularly symptoms of depression.

1.3. The association between ACEs and depression

Depression is a common disorder, with some sources citing a lifetime prevalence of approximately 11% for Canadian adults (Pearson, Janz, & Ali, 2013) and almost 20% for American adults (Kessler & Wang, 2009). Depression is widely considered a major health problem not only in North America, but around the world (Gotlib & Joormann, 2010). Research has demonstrated an association between ACEs and the development of depression later in life (see Angst, Gamma, Rössler, Ajdacic, & Klein, 2011; Hovens et al., 2010; Patten et al., 2014; Poole, Dobson, & Pusch, 2017; Wiersma et al., 2009). In a recent meta-analysis that analyzed eight studies published between 1999 and 2013, Li, D'arcy, and Meng (2016) reported that individuals with a history of childhood adversity were two times more likely to develop depression in adulthood compared with those who had not experienced childhood adversity. As such, the authors suggest that more than half of all cases of depression might be caused by mistreatment in childhood.

Björkenstam, Vinnerljung, and Hjern (2017) published a large longitudinal cohort study that tracked almost 500,000 Swedish participants through governmental and medical records from birth (1984–1988) through adulthood (2012). To assess participants' adversity in childhood, the authors examined government and medical records that indicated experiences such as parental death, separation, substance abuse, and criminality. Depression was assessed by reviewing medical records for anti-depressant prescriptions and consultations with a psychiatrist. The results of this study were consistent with previous research and showed a dose-response relationship between the number of ACEs an individual reported and his or her likelihood of developing depression in adulthood. Indeed, almost half (46%) of the participants who reported depression as adults also reported experiences of adversity in childhood.

1.4. Effects of depression on memory

While it has been proposed that ACEs set the stage for the development of depression across the lifespan (Liu, 2017), it may also be possible that adult individuals with depression are more likely to recall- and therefore report- ACEs as compared to non-depressed individuals. It has been previously established that individuals with depression find it significantly easier to recall negative information than positive information, while non-depressed people find it easier to recall positive information (Gotlib & Joormann,