Adverse childhood experiences and college achievement: The mediating role of depressiveness

Siniša Subotić (sinisa.subotic@pmf.unibl.org)
The University of Banja Luka, Faculty of Philosophy & Faculty of Natural Sciences and Mathematics, Banja Luka, Bosnia & Herzegovina

Nela Marinković (nela.marinkovic@unibl.org)
The University of Banja Luka, Faculty of Philosophy, Banja Luka, Bosnia & Herzegovina

Ivana Zečević (ivana.zecevic@ff.unibl.org)
The University of Banja Luka, Faculty of Philosophy, Banja Luka, Bosnia & Herzegovina

Abstract
Adverse childhood experiences (ACEs) are distressful and potentially traumatic events during childhood. The goal of this research was to examine a link between the ACEs and college achievement (i.e., the average college grade, GPA). Given the robust link between the ACEs and depressiveness, and a negative impact that depression can have on academic achievement, we explored a mediating role of depressiveness scores between the ACEs and the GPA. The sample comprised 142 undergraduate college students. On a bivariate level, the ACE score correlated with depressiveness, but neither ACEs nor depressiveness scores correlated significantly with the GPA. However, when entered together in a mediation analysis, it was established that higher ACEs predict higher depressiveness, which, in turn, predicts lower GPA. At the same time, there is a direct portion of the effect, which suggests that higher ACEs predict higher GPA when depressiveness is accounted for. Thus, even though a total direct effect of the ACEs on the GPA is not significant, the results imply that this might be due to the ACEs having both negative and positive conditional effects on the GPA. We suggest that future research should examine the mechanisms by which overcoming adversity can have a positive impact on higher education achievements, likely through coping and resilience.

Keywords: adverse childhood experiences (ACEs); college achievement; college grades; depressiveness

Introduction
Adverse childhood experiences (ACEs) are distressful and potentially traumatic experiences during childhood, such as physical and sexual abuse, physical and emotional neglect, deprivation, etc. ACEs have been very robustly and (most likely causally) linked to various negative health and social outcomes, including substance abuse, heart, pulmonary and sexually transmitted disease, relationship problems, obesity, depression, suicide attempts, and early death (Larkin, Shields, & Anda, 2012). The adverse effects of trauma exposure have been long known to health professionals, but the most important body of evidence to date came from the Adverse Childhood Experiences Study, which is a large ongoing longitudinal study conducted by the Centers for Disease Control and Prevention (CDC) (Larkin et al., 2012). This study has shown that the ACEs are related to a multitude of negative outcomes in a dose-dependent way, meaning that the higher the number of ACEs is, the higher the incidence and/or severity of the negative outcomes are. It is less important which specific ACEs occurred, as their cumulative number is more important than their severity (Larkin et al., 2012; Souers & Hall, 2016).

The negative effects of the ACEs manifest even at an early age. For example, studies done on school-age children have found a correlation of the ACEs with chronic diseases, poor mental health and lower school engagement and achievement (Bethell, Newacheck, Hawes, & Halfon, 2014). Furthermore, compared to students with no ACEs, children with one ACE are 2.2 times more likely to have school attendance problems, 2.4 times more likely to have behavior problems, 1.5 times more likely to have coursework problems, and 2.3 times more likely to have general health issues. The corresponding probabilities for children with two ACEs are 2.6, 4.3, 2.5, and 2.4, respectively. Probabilities for children with 3+ ACEs are 4.9, 6.1, 2.9, and 3.9, respectively (Souers & Hall, 2016). This implies two things. First, same as the ACE effects in adulthood, the effects manifested at an early age also appear to be dose-dependent. Second, ACEs are obviously relevant not only from the physical and mental health point of view but from the educational point of view as well, as they are clearly linked to various academic and school-related problems.

Note, however, that evidence for the links between the ACEs and school problems and achievement are mostly limited to elementary school, and to a lesser degree high school (e.g., 6-11 years, see: Souers & Hall, 2016; 6-17 years, see: Bethell et al., 2014). The association between the ACEs and academic variables in higher education are largely unknown. Therefore, the goal of this study was to provide a preliminary insight into the association between the ACEs and the academic achievement at the college level (i.e., the average college grade – GPA). Because the effects of the ACEs on educational outcomes might be conditioned by other factors (Bethell et al., 2014), we were also interested in testing if the depressiveness can play a mediating role between the ACEs and the GPA. We chose to focus on the depressiveness because a positive link between the ACEs and depression is very well established (Chapman et al., 2004;
Larkin et al., 2012), as is a negative link between the depression and academic outcomes at all educational levels, including college (e.g., Andrews & Wilding, 2004; Fröjd et al., 2008).

Method

Sample

The sample comprised 142 undergraduate college students from Bosnia and Herzegovina (mostly from the University of Banja Luka), of the average age of 22.62 (SD = 2.56) years. The majority of the participants (67.6%) were females. Participants responded via an anonymous online questionnaire.

Instruments

ACEs were measured by a self-report inventory developed for the original CDC study (and since thoroughly validated; see, e.g., Dube, Williamson, Thompson, Felitti, & Anda, 2004; Finkelhor, Shattuck, Turner, & Hamby, 2015; Larkin et al., 2012). The inventory measures 10 ACEs, with some having multiple subquestion alternatives, e.g.: “Did an adult or person at least 5 years older than you ever...: touch or fondle you or have you touch their body in a sexual way?; or Attempt or actually have oral, anal, or vaginal intercourse with you?” Answering “yes” on either alternative counts as a “yes” for the given ACE. “Yes” responses were summed up to a total 0–10ACEs score.

PHQ-9 (Kroenke & Spitzer, 2002; Kroenke, Spitzer, & Williams, 2001) measures nine self-reported depressiveness symptoms during the last two weeks according to DSM-IV/DSM-V criteria. The answers range from “0 = never” to “3 = every day”. Like other Bosnian-Croatian-Serbian (BCS) samples (Subotić, et al., 2015), a total score had good internal consistency: $\alpha \approx \omega \approx .89$.

GPA (grade point average, i.e., average college grade) was based on the self-reported two-decimal average of all college grades, with a possible range from 6 to 10.

Results

Average values and correlations of the ACEs, GAP & depressiveness

The students reported only 0.87 ($SD = 1.29$) ACEs on average, which is much less than previously reported general sample BCS values, obtained using the same mode of surveying, e.g., $M = 1.42$, $SD = 1.72$ (Subotić, Dimitrijević, & Radetić Lovrić, 2016): $t(141) = -5.04$, $p < .001$, $d = 0.85$. The average depressiveness score was 6.23 ($SD = 4.27$), which is slightly, but not significantly less than other normative general BCS sample values, e.g., $M = 6.91$, $SD = 6.00$ (Subotić, et al., 2015): $t(141) = -1.89$, $p = .06$, $d = 0.32$. The average GPA was 7.86 ($SD = 0.82$).

On a bivariate level, the ACEs correlated with depressiveness: $r = .34$, $p < .001$. However, neither ACEs nor depressiveness score correlated significantly with the GPA: $r = .12$, $p = .17$, and $r = -.12$, $p = .14$, respectively.

Mediation

The mediation analysis is shown in Figure 1. There is a significant indirect effect ($a*b$ path) showing that the ACEs indeed do predict lower GPA through higher depressiveness. At the same time, even though a total direct effect ($c$ path) of the ACEs on the GPA is not significant, there is a portion of the direct effect, which suggests that higher ACEs directly predict higher GPA, if depressiveness is accounted for ($c'$ path).

Discussion

The results show that even though a total direct effect of the ACEs on the GPA is not significant (which is contrary to what one might expect based on the primary and high school data; Bethell et al., 2014; Souers & Hall, 2016), the results imply that this might be due to the ACEs having both negative and positive conditional effects on the GPA.

When the ACEs lead to negative mood states, i.e., depression, its impact on the GPA will be negative. If that is not a case, i.e., (we hypothesize) when a person is able to cope or has developed resilience, the effects might even be positive – overcoming trauma could manifest as an academic asset. A similar mechanism is described in the literature. Bethell and colleagues (2014) have demonstrated that children (ages 6-17) who have built resilience, defined as: “staying calm and in control when faced with a challenge” (p. 2107), had diminished negative impacts of the ACEs. Resilient students had higher rates of school engagement and were less likely to repeat grades compared to students who did not exhibit resilience.

At the college level, it seems that this might even translate into an actual advantage and not just a mitigation of the negatives. This might partially be due to more time available for a person to mature and learn how to cope, or due to students who were not able to achieve that goal – dropping out or never even going to college (which relatively low average ACE score on our sample implies).

Future research should examine the mechanisms by which overcoming adversity can have a positive impact on higher education achievements.
References


