

accepted 4.4.21

**Childhood adversities among students at an English University: A latent class analysis**

**Davies, E., Read, J., Shevlin, M.**

**ABSTRACT**

University students routinely participate in research, including research on trauma and adversity, but the unique implications of trauma and adversity for educational and developmental outcomes for this group have received less attention. This study surveyed first year undergraduate students at an urban university located in the most ethnically diverse district in England, with the second highest poverty rate. Of approximately 7,825 students, 858 responded; a response rate of 11%. The survey included thirteen questions about adverse circumstances before age 18. Four in five students (79%) reported at least one adversity, 51% reported three or more, and 20% reported at least six. Female students reported a higher mean number of adversities than men, but men were significantly more likely to report having been 'attacked, stabbed, shot or robbed by threat'. Where comparisons were possible, rates were higher than for the general population or for the only other UK university survey. A Latent Class Analysis produced four groupings. Besides the 'No adversity' (36%) and 'Intermediate' (46%) classes, there were two 'High adversity' groups, differentiated by high (12%) or moderate (6%) adversities related to cohabitation (parental separation, lived with depressed person, lived with alcohol/drug user, and lived with incarcerated person). Higher rates of adversities, and latent class membership, were related

to predictions that one would not complete one's degree. Implications and next steps are discussed.

**Keywords:** childhood adversities, child abuse, child neglect, trauma-informed, universities

## INTRODUCTION

It is well established that adverse childhood experiences play a major role in the development of a range of physical and mental health problems later in life. Child abuse, for example, plays a causal role in most mental health problems, including anxiety, depression, PTSD, eating difficulties, 'personality disorders', dissociation, sexual difficulties, substance abuse, psychosis and mood swings (Kendler et al., 2000; Kessler et al. 2010; Varese et al., 2012). Adults abused and neglected as children have been found to have higher global symptom severity; be more likely to use mental health services; have earlier, longer and more frequent admissions to psychiatric hospital; and are more likely to self-harm and kill themselves (Hepworth & McGowan, 2013; Read, 2013). Children with high total numbers of childhood adversities in general have been found to be 10 times more likely, as adults, to be prescribed antipsychotic drugs and 17 times more likely to be prescribed antidepressants (Anda et al., 2007). The long-term physical effects of abuse and neglect include higher rates of: cancer, strokes, arthritis, diabetes, lung disease, heart attacks, high blood pressure, and bowel disease (Afifi et al., 2016; Widom et al., 2012; Monnat & Chandler, 2015).

The focus of the current study is childhood adversities in a University student population. There is less research on the relationship between childhood adversities and experiences of university and educational outcomes, though research findings are starting to emerge. For example, childhood trauma among students has been found to negatively correlate with resilience at university (Türk-Kurtça & Kocatürk, 2020). University students who have experienced traumatic events are more likely to feel anxious and lonely at

university (Kearney, Zeligman, Brack, & Payne, 2018; McIntyre et al., 2018), and to misuse alcohol and drugs (Arnekrans et al., 2018), which can impede academic success. Students' experiences of traumatic events also correlate directly with poor retention and low grades at university (Warnecke & Lewine, 2019) and have been identified as barriers to academic success (Arria et al., 2020). Finally, there is emerging research on the importance of intergenerational trauma on retention and indigenous students' experiences of university (Gaywsh & Mordoch, 2018). This may have important implications beyond indigenous communities for students whose families and communities have experienced racism, intergenerational trauma through slavery and persecution.

It is relevant to note that reactions to traumatic and other adverse life events can create 'toxic stress' which can impact on executive functioning, paying attention and self-regulation skills (Kavanaugh et al., 2016; Shonkoff et al., 2012). Toxic stress does not just emanate from person-centred factors. The social determinants of toxic stress include racism and sexism (Shonkoff, Slopen & Williams, 2021; Warner, 2017). The impact of poverty on cognitive functioning is also important (Mani, Mullainathan, Shafir, & Zhao, 2013). Whether challenges emanate from person-centred and/or social issues, these functions and skills enable students to plan, focus, filter distractions, set and achieve goals, control impulses and successfully juggle multiple tasks. These are key life skills for success at university and in graduate-level employment.

Most studies of the prevalence of childhood adversities have, understandably, focussed on either mental health or general populations. Few have focussed specifically on University students, a population undergoing an important life transition during which the effects of childhood adversities may impede their social and academic development. A study of 2,637 undergraduate students in the USA found that 16.3% reported multiple maltreatment. Latent class analysis revealed that 'specific constellations of multiple

maltreatment have qualitatively different associations with adjustment. Emotional abuse, alone or in combination with other maltreatment types, was especially salient for psychopathology (e.g., anxiety, depression), while a combination of physical and emotional abuse was most strongly associated with conduct-related problems (e.g., substance use, risky sexual behavior)' (Berzenski & Yates, 2011). A smaller US study, of 311 female undergraduates, found that 29.6% reported at least one of the four types of child maltreatment assessed; 97.4% had experienced at least one of the 34 specific types of childhood victimization, across six categories; and that 15.4% reported at least one type of child maltreatment from all six categories. Poly-victimization was significantly related to current psychological distress in this study (Richmond et al., 2009) and in a more recent study of 349 college students (Elliott et al, 2019).

. A recent web-based survey, of 1,260 first-year students from two large urban universities in South Africa, found that 48.4% reported one or more types of childhood maltreatment, the most common being emotional abuse (26.7%) and physical abuse (20.8%). These two types of abuse were particularly predictive of current depression, anxiety and drug use (Myers et al., 2020).

A study at Queen's University in Belfast (McGavock & Spratt, 2014), 765 students completing the Adverse Childhood Experiences (ACEs) questionnaire (Felitti et al., 1998). More than half of the respondents (56%) reported at least one of the ten adversities and 12.4% reported four or more. Table 1 reports the rates for the individual adversities (McGavock, 2012) and compares them to the findings of the current study.

The current study represents the first stage of a research programme at the University of East London, 'Beyond Adversity', designed to enhance student wellbeing, retention and achievement via the development of a strategy to reduce the impact of the multiple adversities experienced by students. This paper reports some of the results of a survey of first

year undergraduates, specifically those concerning childhood adversities, and how those adversities are related to age, gender and ethnicity.

Rates of cumulative (summed) adversity were also calculated to provide an indication of multiple exposure to adversities. In addition, because it was expected that there would be substantial co-occurrence of adversities, latent class analysis (LCA) was used to summarise the data. LCA is a statistical method to identify sub-populations, or 'classes', of people with similar endorsement patterns from multivariate categorical data. A recent systematic review of trauma exposure concluded that the "...universal finding from this research is that trauma histories can be described more accurately in terms of classes rather than a summative score" (O'Donnell et al, 2017, p. 224). The resultant classes were examined in relation to demographic (age, gender, and ethnicity) and educational (belief about degree completion) variables.

## **MATERIALS and METHODS**

The project was approved by the University of East London (UEL) Research Ethics Committee. Informed consent was given by all participants at the beginning of the questionnaire.

### **Participants**

All 7.825 first year (level 4) students at least 18 years of age, with fluent English, were eligible to participate.

UEL is situated in the London Borough of Newham, which, at the 2011 census, was the most ethnically diverse district in England and Wales, with the second-highest percentage of Muslims in the UK. In 2017 Newham had the second highest poverty rate in the country (Trust for London, 2017). Just over three quarters of UEL students are from the local area.

## **The Survey**

The 'Beyond Adversity' survey was designed for this project. It was piloted with eight students. It consists of questions about childhood adversities, adult adversities, stressors and caring/parenting responsibilities, and a range of outcome measures, including quality of life and anxiety. This data was matched with demographic data from UEL's Strategic Planning Department through student IDs. The questions that are the focus of the current paper are the questions about childhood adversities (see Table 1). These questions were preceded by the statement "While you were growing up, before the age of 18".

There were nine questions from the Adverse Childhood Experiences (ACEs) scale (Felitti et al., 1998) about abuse, neglect and parental mental illness, incarceration, substance use, separation, and domestic violence. In response to feedback from the pilot study, an additional response option was added to the question about separation and divorce to include the response that parents never lived together. The three additional questions were: 'Have you been threatened, hit or hurt badly in school or the community?' 'Have you been attacked, stabbed, shot at or robbed by threat?' and 'Have you been treated badly because of race, sexual orientation, place of birth, disability or religion?' The additional questions about violence were taken from the CATS Life Events screen (version 2.0) in an attempt to ensure a more comprehensive coverage of childhood adversities. The discrimination question was added mindful of the particular demographics of our student body.

Most questions required yes/no responses. The abuse and neglect questions included 'once' and 'more than once' options. These two options were combined to form a positive response for the purposes of data analysis, except for the verbal/emotion abuse question ('Did a parent or adult in your home ever swear at you, insult you, or put you down?') for which only the 'more than once' response counted as a positive response, partly so as to be comparable to a general population study (Bellis et al., 2014). There were three possible

responses to 'Were your parents ever separated or divorced?': 'No' 'Yes', and 'Parents didn't live together'. Either of the last two responses was scored as one positive response when calculating total adversities.

Participant's beliefs about how likely they were to complete their course was assessed using the question, "How likely are you to complete your degree?" The 5 response options were (1) 'Definitely', (2) 'Probably', (3) 'Not sure', (4) 'Probably not', (5) 'Definitely not'. For the purpose of analysis in relation to the Latent Classes, these scores were transformed into a binary variable to represent positive belief about course completion, by recoding 'Definitely' and 'Probably' into (1) 'Positive belief' and the remaining categories were recoded as (0) 'Negative belief'.

### **Recruitment.**

The survey was completed on the UEL supported Online Survey platform with a link through their student email address. Seven part time student interns were employed to assist with additional recruitment. They received training on ethics and confidentiality from the first author and training with a mental health practitioner to enable them to respond to issues that may come up for participants. Programme and Module Leaders were asked for access to lectures and tutorials. Interns then explained the project and asked for participation either immediately, if the lecturer had agreed, or at some time after the lecture.

The Participant information made it clear that only the researchers could access their responses; that demographic data would be accessed through UEL, and that accepting the offer to participate or choosing to decline would have no impact on their assessments or learning experience. Throughout the survey all participants were repeatedly offered prompt access to trauma-informed student well-being services, which had been extended for this purpose in case some students are triggered by responding to the survey.

## Data Analysis

The analysis was primarily descriptive, with odds ratio comparisons, where possible, to a general population study (Bellis et al., 2014) and the UK study mentioned above (McGavock & Spratt, 2014). In order to develop a comprehensive picture of the relationships involved, total adversity scores and individual items were analysed in relation to gender, ethnicity and age, using independent sample t-tests and chi-squared tests as appropriate, and, for the relationship between age and total adversity score, a Pearson correlation coefficient. For the purposes of totalling adverse events, 'parental separation' and 'parents never lived together' were combined into one event, making a possible maximum total of 12 events. Eighteen ethnicity categories were reduced to five, 'black' (257) 'white' 248, 'asian'(189) 'other' (50) and unknown/refused (114), and only the first three used in analyses. Due to the number of analyses the level of significance was set at  $p < .01$  rather than  $p < .05$ , to reduce the probability of Type I (false positive) errors.

A Latent Class Analysis (LCA) was undertaken so as to identify groups with similar patterns of endorsement of the 12 adversity items. The fit of six models was assessed, with models estimated utilising robust maximum likelihood applying all data for estimation of models (Yuan & Bentler, 2000). In order to avoid solutions that were based on local maxima, we used 5,000 random sets of starting values as well as 1,000 final stage optimizations. We compared the relative fit of the models by using the following information theory based fit statistics, with lower values indicating better fit: Akaike information criterion (AIC), Bayesian information criterion (BIC), and sample size-adjusted BIC (ssaBIC). We used the Lo-Mendell-Rubin adjusted likelihood ratio test (LMR-A) in order to compare models with increasing numbers of latent classes. A nonsignificant value ( $p > .05$ ) suggests that the model with one less class be accepted (Lo et al., 2001). Each solution's entropy was assessed so as



to ensure proper classification of individuals. Values closer to one indicate better classification (Ramaswamy et al., 1993). We also assessed model selection in terms of the information that additional classes provided, classes that differ qualitatively rather than simply quantitatively are likely to be more informative (Masyn, 2013). Mplus (version 7.11) was utilised to specify and estimate this model.

Class membership was coded as a categorical variable based on participant's most likely latent class membership based on estimated posterior probabilities. The association between class membership and the demographic/educational variables was assessed using chi-square tests for categorical variables and ANOVA for continuous variables. For the chi-square tests, standardised residuals ( $>2$ ) were used to identify where observed counts were significantly greater than expected counts.

## **RESULTS**

### **Sample characteristics.**

The survey was completed by 858 of the 7,825 first year students, a response rate of 11.0%. More than two thirds (69.3%) were women. Nearly a third (30.0%) were categorised as 'black', 28.9% as 'white', 22.0% as 'asian' (and 19.2% as either 'other' or 'unknown'). The average age was 27.7 years (sd = 13.5). Black students were significantly older (mean = 32.9 years) than both White (27.6) and Asian students (23.2); and White students were significantly older than Asian students (with all differences at the  $p < .001$  level).

The demographics of the 7,825 students from which this sample emanated was: 54.6% female; 25.8% 'black, 38.3% 'asian' and 24.2% 'white'; with an average age of 29.2 years. Thus, male and Asian students were underrepresented in our sample.

### **Childhood Adversities**

The mean number of adverse events reported was 3.09 (sd = 2.71). Four in five students (79.3%) reported at least one of the twelve adverse events, and half (50.7%) reported three or more. One in five (19.6%) reported at least six.

## **Gender**

Women experienced a higher mean total of adverse events as children (3.26) than men (2.60) ( $t = 3.28$ ,  $df = 822$ ,  $p = .001$ ); with 82.3% of women reporting at least one adversity, compared to 72.5% of men.

Table 1 shows that sexual abuse before age 18 was much more common in women (23.2%) than men (9.8%) ( $X^2 = 20.6$ ,  $p < .001$ ), as was verbal/emotional abuse (47.3% vs 31.6%) ( $X^2 = 17.8$ ,  $p < .001$ ). Women were more likely to have lived, as a child, with someone who had been incarcerated (7.1% vs 2.7%,  $X^2 = 12.7$ ,  $p < .01$ ) or who abused substances (20.6% vs 14.8%;  $X^2 = 12.6$ ,  $p < .01$ ). Women were also more likely (49.6% vs 32.4%) to have had parents who separated or had never lived together ( $X^2 = 22.1$ ,  $p < .001$ ). Men were far more likely than women to report having been ‘attacked, stabbed, shot or robbed by threat’ before age 18 (26.3% vs 11.1%;  $X^2 = 30.6$ ,  $p < .001$ ).

- - Table 1 about here - -

## **Ethnicity**

Students categorised as ‘Black’ had a higher mean total of adverse events (3.30) than those categorised as ‘Asian’ (1.98) ( $t = 5.43$ ,  $df = 440$ ,  $p < .001$ ). Those categorised as ‘White’ also had a higher mean (3.30) than Asian students ( $t = 5.31$ ,  $df = 432$ ,  $p < .001$ ).

Black students experienced more ‘parental separation’ (59.8%) than White (46.0%;  $p < .01$ ) and Asian students (16.7%;  $p < .001$ ). They also reported more ‘prejudice’ (54.5%) than

White (34.0%;  $p < .001$ ) and Asian students (26.2%;  $p < .001$ ). Black students reported more 'verbal/emotional abuse' than Asian students (46.0% vs 26.2%;  $p < .001$ ).

White students reported more 'living with mental illness' (38.8%) than Black (18.1%;  $p < .001$ ) and Asian students (16.2%,  $p < .001$ ). They also reported more 'living with drug/alcohol problems' (31.6%) than Black (13.0%;  $p < .001$ ) and Asian students (8.7%;  $p < .001$ ). White students also reported higher rates than Asian students for four other adversities: 'parental separation' (46.0% vs 16.7%;  $p < .001$ ), 'verbal/emotional abuse' (45.3% vs 26.2%;  $p < .001$ ), 'hit' (39.5% vs 24.0%;  $p = .001$ ), and 'attacked' (20.2% vs 9.3%,  $p < .01$ ). Thus, Asian students reported lower rates than White students on six adversities and lower rates than Black students on three adversities (see above). They did not score higher than either of the other two groupings on any of the 13 adversities.

### **Age**

Age was unrelated to total score or any individual adversity.

### **Prediction of degree completion**

Beliefs about probability of completing one's degree were unrelated to age or ethnicity. Men made more positive predictions ( $X^2 = 17.2$ ,  $p < .05$ ). Total adverse events was significantly related to negative predictions ( $\rho = .12$ ,  $p < .001$ ).

### **Latent Class Analysis**

Table 2 shows the fit statistics for the LCA analysis. The BIC was lowest for the 3-class solution, but the LMR-A suggested a 4-class solution. Inspection of the 3- and 4-class solutions indicated that the 4-class solution provided important information compared to the 3-class solution; the 3-class solution represented 3 quantitatively differing classes (low,

intermediate and high) but the 4-class solution separated the ‘high’ class into 2 groups differentiated by the parental adversity items (Parental separation, Lived with depressed/‘mentally ill’ person, Lived with alcohol/drug use, Lived with incarcerated person). Also, the entropy for the 4-class solution was higher, so the 4-class solution was considered the best. The profile plot is shown in Figure 1.

- - Table 2 and Figure 1 about here - -

Class 4 (n=307: 36.1%) was characterised by low probabilities of endorsing any of the adversity items, and was labelled the ‘No Adversity’ class. Class 2 (n=393: 46.1%) was the ‘Intermediate’ class; compared to the ‘No Adversity’ class this class had much higher probabilities associated with parental separation, discrimination, being threatened or hurt, and verbal/emotional abuse. Class 3 (n=99: 11.6%) was characterised by high probabilities of reporting all the adversities and was labelled the ‘High adversity’ class. Class 1 (n=53: 6.2%) had a similar profile to Class 3 on many of the adversities, the difference being lower probabilities associated with some household adversities related to cohabitation (separation, lived with depressed person, lived with alcohol/drug user, and lived with incarcerated person). This class was labelled ‘High adversity, moderate cohabitation problems’.

The classes were significantly associated with gender ( $\chi^2(3)=17.12$ ,  $p < .01$ ) with females significantly more likely to be in the ‘High Adversity’ class and significantly less likely to be in the ‘No Adversity’ class. Ethnicity was also significantly associated with class membership ( $\chi^2(6)= 68.09$ ,  $p < .001$ ). Black participants were more likely than chance to be in the ‘High adversity, moderate cohabitation problems’ and ‘Intermediate’ classes, and less likely to be in the ‘High Adversity’ and ‘No Adversity’ classes. Asian participants were more likely to be in the ‘No Adversity’ class, and less likely to be in the ‘Intermediate’ and ‘High

Adversity' classes. White participants were more likely to be in the 'High adversity' and less likely to be in the 'No Adversity' classes. There was a significant main effect for age across the classes ( $F(3, 791)=5.48, p <.01$ ) with the 'High adversity, moderate cohabitation problems' class (mean 32.94 years) being significantly older than all other classes (Intermediate, Mean 27.36 years; High adversity, Mean 26.56 years; No Adversity, Mean 26.78 years).

The association between class membership and beliefs about course completion was significant ( $\chi^2(3)= 20.06, p <.001$ ) with the 'High adversity' class being more likely to have negative beliefs and the 'No Adversity' more likely to have positive beliefs about completing the degree.

## **DISCUSSION**

This study adds to the literature demonstrating the large numbers of university students who have survived adverse childhood experiences. The highest rates of childhood adversities, in this UEL sample of 858 first year students, were for Discrimination (43.4%), Parental separation (35.1%, or 44.5% including Parents never lived together), Verbal/emotional abuse (33.4%) and Threatened, hit or hurt badly in school or the community (32.5%). Black students reported more adversities and discrimination than other groups. Female students reported more adversities including sexual abuse than male students. These results help to shine a light on social factors that may contribute to differences between groups including racism (Paradies et al., 2015; Shonkoff et al., 2021) and sexism (Klonoff, Landrine, & Campbell, 2000; Warner, 2017).

### **Comparisons to previous studies**

Only some direct comparisons could be made with the general population (Bellis et al., 2014) and the Queen's University study (McGavock, 2012; McGavock & Spratt, 2014), because of lack of the same question or scoring questions differently (eg 'often' and 'very often' vs 'once' or 'more than once'). Where precise comparisons could be made, the UEL sample had higher rates of adversities, particularly for Sexual abuse, Verbal/emotional abuse, and Living with someone who had been incarcerated.

On the basis of similar, but not identical, lists of childhood adversities, the percentages reporting at least one adversity were: UEL - 79.3%, Queen's - 56.1%, general population - 47.9%. The percentages that had experienced four or more adversities were: UEL - 37.4%, Queen's - 12.4%, and general population - 9.0%. These differences are consistent with previous findings that ACE scores are highly correlated with poverty (Nurius et al., 2016) and deprived geographical areas (Lewer et al., 2019), where most of UEL's students live.

### **Latent Class Analyses**

The results from the LCA suggested that the participant's history of adversity could be best described in terms of four homogeneous groups. Approximately one third of the sample were in the 'No Adversity' class; in almost all extant LCA analyses of trauma exposure there is this type of baseline group with low levels of trauma exposure (O'Donnell et al., 2017). However, those based on college student in the US (Miller-Graff et al., 2015) and Danish youth (Shevlin & Elklit, 2008) reported much larger baseline classes, 51.3% and 58.0% respectively, than observed in this study (36.1%). This suggests that this sample, in general, has experienced high levels of adversity. This is further evidenced by the 'High adversity' and 'High adversity, moderate cohabitation problems' making up a combined 17.8% of the sample. This is similar to the findings from Berzenski and Yates (2011) who reported a

general ‘maltreatment class’ that accounted for 20.0% of the participants based on a sample of American undergraduate students ( $n = 2637$ ). Interestingly, they also found heterogeneity within this general maltreatment group; when this group was analysed separately there were four groups characterised by physical abuse, emotional abuse, domestic violence and sexual abuse.

In our study these two ‘high’ groups were more similar than those reported by Berzenski and Yates (2011) with the main differences being only on the adversities related to cohabitation. Almost half (46.1%) of the sample were in the ‘Intermediate’ class, and the probabilities associated with all adversities were higher than the ‘No Adversity’ class, with the exception of living with an incarcerated person and physical neglect. This type of intermediate class has been found before in analysis of trauma exposure in the general population (Houston, Shevlin, Adamson, & Murphy, 2011), but the size of this class was much smaller (14%). Overall the LCA results indicate that adversity is common in this sample, that there is a high level of co-occurrence, and the rates of adversity appear to be higher than those reported in other general population and college samples.

The classes were also associated with demographic and educational variables. Females were more likely to be in the ‘High adversity’ class and this is consistent with previous general population findings (Coêlho, Santana, Viana, Andrade, & Wang, 2018). The relationship between the classes and ethnicity was nuanced; a complex pattern of association between adversity and ethnicity has been found here, and the need to control for socioeconomic factors has been stressed (Mersky & Janczewski, 2018). The results from the analysis in the current study indicate that there is no simple association between ethnicity and exposure to adversity, and this is potentially because all participants were from socially and economically deprived areas. High levels of adversity were also associated with more negative beliefs about the participant’s likelihood to complete their course of study and this

is consistent with findings that have shown that childhood adversity is associated with negative schemas and views of self (Lumley & Harkness, 2007; Türk-Kurtça & Metin, 2019).

## **Implications**

The University of East London is keen to increase retention and the academic achievement of its students. In common with other English universities, it produces an Access and Participation Plan with targets to increase access to marginalised groups, student engagement and success, with an emphasis on decreasing the awarding gap between White and Black and Ethnic Minority (BAME) students. The university reports on its progress towards these targets to the Government Office for Students. There is strong awareness at all levels of the university about the impact of poverty. The Student Wellbeing Service sees the impact of mental health issues on the retention and achievement of the students it services. However, prior to this study, there was less understanding of prevalence of adverse childhood experiences within the general student population; the relationship between mental health and adverse child experiences beyond the student wellbeing service; and the impact of these experiences on student engagement and achievement. Active dissemination and discussion of the findings with students and staff is increasing the visibility of these issues. In so doing, it increases the chances of generating actions in the interests of these students, because retention and achievement is of paramount importance to the university. Universities have also focused more on mental health in the pandemic and this work is also contributing to the development of the university's 2021 voluntary application for accreditation under the Student Mental Health Charter, created by Student Minds.

Future papers will analyse the relationships between specific adversities, total number of adversities and the two high adversity latent classes, with adult stressors, mental health, as



well as with actual student retention and attainment. These analyses are informing staff training on trauma-informed care and educational practices in 2021, as well as structured discussions with staff and students.

The issues are likely to be best addressed by developing strengths-based trauma-informed care and educational policy and practice (Richardson et al., 2018). Trauma-informed universities would effectively respond to students' and staff's experiences of trauma through administrative, academic and pastoral care systems, for example, changes to admissions processes (Paterson, 2017) and teaching practices (Gutierrez & Gutierrez, 2019). The data suggests that traumatic experiences stem from not only individual and family factors but also societal forces including racism and sexism. The same societal issues that lead to some early childhood adverse experiences might persist into college, and manifest as revictimization and/or new types of adversity/trauma that perpetuate intergenerational cycles of trauma. If so, trauma-informed institutions need to not only address individual issues but social factors that impact on retention and success.

The primary impetus for change in universities remains retention and achievement. Nonetheless, the increased focus on mental health in the pandemic, and the spotlight on institutional racism from the Black Lives Matter movement, may also prove to be important catalysts for enhanced trauma-informed practices. It's been argued that trauma-informed care is an important component of a social justice framework in schools (McIntosh, 2019) and that discipline processes in schools need to be trauma-informed and race-centred (Joseph, Wilcox, Hnlica & Hansen, 2020). This may also be relevant to university provision, whereby trauma-informed care offers the possibilities of greater understanding of intergenerational trauma (Gaywsh & Mordoch, 2018) and increased inclusion of diverse student populations (Robertson et al., 2018) towards an environment where all students can flourish.

## **Limitations**

A response rate of 11.0 % was lower than the 18.6% in the Queen's University study.

Students with higher rates of adversities may have been more likely to be non-responders because remembering and reporting the adversities might cause discomfort. Another possible source of underestimation of adversity rates is the fact that longitudinal follow-up studies of adults whose childhood abuse was documented find that their retrospective reports of childhood abuse underestimate actual occurrence (Della Femina et al., 1990; Pereda et al., 2009).

There was an error in using a negative in 'parents didn't live together' which may have caused some confusion for some participants. Failure to include a physical abuse item, and gender in the discrimination item, were oversights on our part that definitely lowered the total adversity scores.

## **ACKNOWLEDGMENTS**

We would like to thank the multi-disciplinary Beyond Adversity Advisory Group, drawn from various components of the University of East London: Natalie Freeman (Volunteering Manager), Dr Eva Galante (Bioscience), Dr Rawad Hammad (Computing), Mohammad Ismail (Student Union President), Gail May (Director of Civic Engagement), John McCarthy (Head of Student Wellbeing Services), Dr Rebecca Page-Tickell (Business and Law), Dr Elizabeth Stokes (Business and Law) and Dr Angie Voela (Social Sciences).

The project could not have succeeded without the enthusiasm and hard work of the student interns: Halima Sacdia Abdirahman, Rozina Ashraf, Khalid Fata, Sophie Fletcher, Aliyah Jeewa, Chloe Mzimba and Nangyaly Shinwari

## **FUNDING**

Funding was provided through a competitive process within UEL for Office for Student funding under UEL's Access and Participation Plan.

## **DECLARATION OF INTEREST STATEMENT**

The authors have no conflicts of interest in relation to this paper.

## **REFERENCES**

- Afifi, T., MacMillan, H., Boyle, M., Cheung, K., Taillieu, T., Turner, S., & Sareen, J. (2016). Child abuse and physical health in adulthood. *Health Reports, 27*, 10-18.
- Anda, R., Brown, D., Felitti, V., Bremner, J., Dube, S., & Giles, W. (2007). Adverse childhood experiences and prescribed psychotropic medications in adults. *American Journal of Preventative Medicine, 32*, 389-394.
- Arnekrans, A. K., Calmes, S. A., Laux, J. M., Roseman, C. P., Piazza, N. J., Reynolds, J. L., Harmening, D., & Scott, H. L. (2018). College Students' Experiences of Childhood Developmental Traumatic Stress: Resilience, First-Year Academic Performance, and Substance Use. *Journal of College Counseling, 21*(1), 2–14.
- Arria, A. M., Barrall, A. L., Vincent, K. B., Bugbee, B. A., & O'Grady, K. E. (2020). Development of the Measure of Obstacles to Succeeding Academically in College (MOSAIC). *Journal of College Student Development, 61*(1), 103–108.
- Bellis, M., Lowey, H., Leckenby, N., Hughes, K., & Harrison, D. (2014). Adverse childhood experiences: retrospective study to determine their impact on adult health behaviours and health outcomes in a UK population. *Journal of Public Health, 36*, 81-91

- Berzenski, S. & Yates, T. (2011). Classes and consequences of multiple maltreatment: a person-centered analysis. *Child Maltreatment, 16*, 250-61.
- Bick, J., & Nelson, C. A. (2016). Early adverse experiences and the developing brain. *Neuropsychopharmacology, 41*, 177-196.
- Coêlho, B. M., Santana, G. L., Viana, M. C., Andrade, L. H., & Wang, Y. P. (2018). Gender-related dimensions of childhood adversities in the general population. *Brazilian Journal of Psychiatry, 40*(4), 394-402.
- Della Femina, D., Yeager, C., & Lewis, D. (1990). Child abuse: Adolescent records vs. adult recall. *Child Abuse & Neglect, 14*, 227-231.
- Elliott, A. N., Faires, A., Turk, R. K., Wagner, L. C., Pomeroy, B. M., Pierce, T. W., & Aspelmeier, J. E. (2019). Polyvictimization, Psychological Distress, and Trauma Symptoms in College Men and Women. *Journal of College Counseling, 22*(2), 138–151.
- Felitti, V., Anda, R., Nordenburg, D., Williamson, D., Spitz, A., Edwards, V., Koss, M., & Marks, J. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) study. *American Journal of Preventive Medicine, 14*, 245–58.
- Gaywsh, R., & Mordoch, E. (2018). Situating Intergenerational Trauma in the Educational Journey. *INEducation, 24*, 12-19
- Gutierrez, D., & Gutierrez, A. (2019). Developing a Trauma-Informed Lens in the College Classroom and Empowering Students through Building Positive Relationships. *Contemporary Issues in Education Research, 12*(1), 11–18.
- Hepworth, I., & McGowan, L. (2013). Do mental health professionals enquire about childhood sexual abuse during routine mental health assessment in acute mental health settings? A substantive literature review. *Journal of Psychiatric and Mental Health Nursing, 20*, 473-483.

- [Houston, J., Shevlin, M., Adamson, G., & Murphy, J. (2011). A person-centred approach to modelling population experiences of trauma and mental illness. *Social Psychiatry and Psychiatric Epidemiology*, 46, 149-158.
- Joseph, A.A., Wilcox, S.M., Hnilica, R.J., & Hansen, M.C. (2020). Keeping Race at the Center of School Discipline practices and Trauma-Informed Care: An Interprofessional Framework, *Children & Schools*, 42 (3), 161-170.
- Kavanaugh, B., Dupont-Frechette, J., Jerskey, B., & Holler, K. (2016). Neurocognitive deficits in children and adolescents following maltreatment: Neurodevelopmental consequences and neuropsychological implications of traumatic stress. *Applied Neuropsychology: Child*, 6, 64-78.
- Kearney, M. A., Zeligman, M., Brack, J. L., & Payne, E. (2018). Trauma and Dissociation: Predictors of Loneliness in Students at an Urban University. *Journal of College Counseling*, 21(2), 165–179.
- Kendler, K., Bulik, S., Silberg J., Hettema, J., Myers, J., & Prescott, C. (2000). Childhood sexual abuse and adult psychiatric and substance use disorders in women. *Archives of General Psychiatry*, 57, 953-959.
- Kessler, R., McLaughlin, K., Green, J., Gruber, M., Sampson, N., Zaslavsky, A., Aguilar-Gaxiola, S., Obaid Alhamzawi, O., Alonso, J., Angermeyer, M., Benjet, C., Bromet, E., Chatterji, S., De Girolamo, G., Demyttenaere, K., Fayyad, J., Florescu, S., Gal, G., Gureje, O., Haro, J. ...Williams, D. (2010). Childhood adversities and adult psychopathology in the WHO world mental health surveys. *British Journal of Psychiatry*, 197, 378-385.
- Klonoff, E. A., Landrine, H., & Campbell, R. (2000). Sexist discrimination may account for well-known gender differences in psychiatric symptoms. *Psychology of Women Quarterly*, 24(1), 93-99.

- Lewer, D., King, E., Bramley, G., Fitzpatrick, S., Treanor, M.C., Maguire, N., Bullock, M., Hayward, A., Story, A. (2019). The ACE Index: mapping childhood adversity in England. *Journal of Public Health, 42*, 487-495.
- Lo, Y., Mendell, N., & Rubin, D. (2001). Testing the number of components in a normal mixture. *Biometrika, 88*, 767-778.
- Lumley, M. N., & Harkness, K. L. (2007). Specificity in the relations among childhood adversity, early maladaptive schemas, and symptom profiles in adolescent depression. *Cognitive Therapy and Research, 31*(5), 639-657.
- Mani, A., Mullainathan, S., Shafir, E., & Zhao, J. (2013). Poverty impedes cognitive function. *Science, 341*(6149), 976-980.
- Masyn, K. E. (2013). *Latent class analysis and finite mixture modeling*. In T. D. Little (Ed.), *Oxford library of psychology. The Oxford handbook of quantitative methods: Statistical analysis* (p. 551–611). Oxford University Press.
- McGavock, L. (2012). *Prevalence of adverse childhood experiences in an undergraduate student population: Associations with health, education and social services*. PhD Thesis, Queen's University Belfast.
- McGavock, L. & Spratt, T. (2014). Prevalence of adverse childhood experiences in a university population: Association with use of social services. *British Journal of Social Work, 44*, 657-674.
- McIntosh, M. L. (2019). Compound Fractures: Healing the Intersectionality of Racism, Classism and Trauma in Schools with a Trauma-Informed Approach as Part of a Social Justice Framework. *Journal of Educational Leadership and Policy Studies, 3*(1).McIntyre, J.C., Worsley, J., Corcoran, R., Woods P.H., & Bentall, R.P. (2018). Academic and non-academic predictors of student psychological distress: the role of social identity and loneliness, *Journal of Mental Health, 27*, 230-239

- Mersky, J. P., & Janczewski, C. E. (2018). Racial and ethnic differences in the prevalence of adverse childhood experiences: Findings from a low-income sample of US women. *Child Abuse & Neglect*, *76*, 480-487.
- Miller-Graff, L., Howell, K., Martinez-Torteya, C., & Hunter, E. (2015). Typologies of childhood exposure to violence: Associations with college student mental health. *Journal of American College Health*, *63*, 539-549.
- Monnat, S. & Chandler, R. (2015). Long-term physical health consequences of adverse childhood experiences. *The Sociological Quarterly*, *56*, 723–752.
- Myers, B, Bantjes, J., Lochner, C., Mortier, P., Kessler, R., & Stein, D. (in press). Maltreatment during childhood and risk for common mental disorders among first year university students in South Africa. *Social Psychiatry and Psychiatric Epidemiology*.
- Nurius, P., Green, S., Logan-Greene, P., Longhi, D., & Song, C. (2016). Stress pathways to health inequalities: Embedding ACEs within social and behavioural contexts. *International Public Health Journal*, *8*, 241-256.
- O'Donnell, M., Schaefer, I., Varkera, T., Kartala, D., Forbesa, D., Bryant, R., Silovee, D., Creamer, M., McFarlane, A., Malhig, G., Felmingham, K., Van Hooff, M., Hadzi-Pavlovic, D., Nickerson, A., & Steeli, Z. (2017). A systematic review of person-centered approaches to investigating patterns of trauma exposure. *Clinical Psychology Review*, *57*, 208-225.
- Paterson, J. (2017). Trauma Aware & Safety Ready. *Journal of College Admission*, *237*, 40–45.
- Paradies, Y., Ben, J., Denson, N., Elias, A., Priest, N., Pieterse, A., Gupta, A., Kelaher, M., & Gee, G. (2015). Racism as a determinant of health: a systematic review and meta-analysis. *PloS one*, *10*(9), e0138511.
- Pereda, N., Guilera, G., Forns, M., & Gomez-Benito, J. (2009) ‘The prevalence of child

- sexual abuse in community and student samples: A meta-analysis', *Clinical Psychology Review*, 29, pp. 328–38.
- Ramaswamy, V., DeSarbo, W., Reibstein, D., & Robinson, W. (1993). An empirical pooling approach for estimating marketing mix elasticities with PIMS data. *Marketing Science*, 12, 103-124.
- Read, J. (2013). Childhood adversity and psychosis: From heresy to certainty. In: J. Read, J. Dillon, J. (Eds.) *Models of madness: Psychological, social and biological approaches to psychosis* (2<sup>nd</sup> edition), pp. 249-275. London: Routledge, 2013
- Richardson, W., Pitts, C., Reed, S. F., & Kent, J. (2018). Quality of Life of Minority Students Impacted by Adverse Childhood Experiences (ACEs). *Adult Higher Education Alliance*. Paper presented at the Annual Meeting of the Adult Higher Education Alliance (42nd, Orlando, FL, Mar 8-9)
- Richmond, J., Elliott, A., Pierce, T., Aspelmeier, J., Alexander, A. (2009). Polyvictimization, childhood victimization, and psychological distress in college women. *Child Maltreatment*, 14, 127-147.
- Shevlin, M. & Elklit, A. (2008). A latent class analysis of adolescent adverse life events based on a Danish national youth probability sample. *Nordic Journal of Psychiatry*, 62, 218-224
- Shonkoff, J.P., Garner, A., Siegel, B. Dobbions, M., Earls, M., McGuinn, L., Pascoe, J., & Wood, D. (2012). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*, 129, 232-246.
- Shonkoff, J., Slopen, N., & Williams, D. (2021). Early Childhood Adversity, Toxic Stress, and the Impacts of Racism on the Foundations of Health. *Annual Review of Public Health*, 42. <https://www.annualreviews.org/doi/abs/10.1146/annurev-publhealth-090419-101940>



- Trust for London. (2017). *Poverty and inequality data for Newham*.  
<https://www.trustforlondon.org.uk/data/boroughs/newham-poverty-and-inequality-indicators>
- Türk-Kurtça, T., & Kocatürk, M. (2020). The Role of Childhood Traumas, Emotional Self-Efficacy and Internal-External Locus of Control in Predicting Psychological Resilience. *International Journal of Education and Literacy Studies*, 8, 3, 105-115
- Varese, F., Smeets, F., Drukker, M., Lieveerse, R., Lataster, T., Viechtbauer, W., Read, J., van Os, J., & Bentall, R. (2012). Childhood trauma increases the risk of psychosis: a meta-analysis of patient-control, prospective and cross-sectional cohort studies. *Schizophrenia Bulletin*, 38, 661-671.
- Warnecke, A., & Lewine, R. (2019). First Semester Academic Functioning of College Students: The Role of Stressful and Traumatic Life Events. *International Journal for the Scholarship of Teaching and Learning*, 13(2).
- Warner, J. (2017). *The Unequal Toll of Toxic Stress: How the Mental Burdens of Bias, Trauma, and Family Hardship Impact Girls and Women*. Center for American Progress, <https://www.americanprogress.org/issues/women/reports/2017/11/17/443028/unequal-toll-toxic-stress/>
- Widom, C., Czaja, S., Bentley, T., & Johnson, M. (2012). A prospective investigation of physical health outcomes in abused and neglected children: New findings from a 30-year follow up. *American Journal of Public Health*, 102, 1135-1144.
- Yuan K. & Bentler, P. (2000). Three likelihood-based methods for mean and covariance structure analysis with non-normal missing data. *Sociological Methodology*, 30, 165-200.

Table 1. Rates of childhood adversities, compared to general population and a highly ranked University.

	University of East London (n = 845)	UK General Population <sup>1</sup> (n = 3885)	Odds Ratio <sup>2</sup>	Queens University <sup>3</sup> (n = 764)	Odds Ratio <sup>2</sup>
Parental separation <sup>A</sup>	35.1%	24.3%	1.4	22.8%	1.5
Parents never lived together	9.4%				
Sexual abuse <sup>A</sup>	18.9%	6.3%	3.0		
Verbal/emotional abuse <sup>A</sup>	33.4%	18.2%	1.8	20.6%	1.6
Physical neglect <sup>A</sup>	8.9%				
Emotional neglect <sup>A</sup>	29.0%				
Domestic violence <sup>A</sup>	23.5%	13.1%	1.8		
Lived with depressed/'mentally ill' person <sup>A</sup>	26.4%	12.0%	2.2	30.1%	0.9
Lived with alcoholic/drug use <sup>A</sup>	19.5%	≥13.8% <sup>#</sup>	≤1.4	16.7%	1.2
Lived with incarcerated person	6.1%	4.3%	1.4	2.6%	2.3
Threatened, hit or hurt badly in school or the community	32.5%				
Attacked/stabbed/shot/robbed by threat	15.8%				
Discrimination	43.4%				

A = Item from Adverse Childhood Experiences (ACEs) scale (Felitti et al., 1998).

1 Bellis et al. (2014)

2 Odds ratio relative to UEL

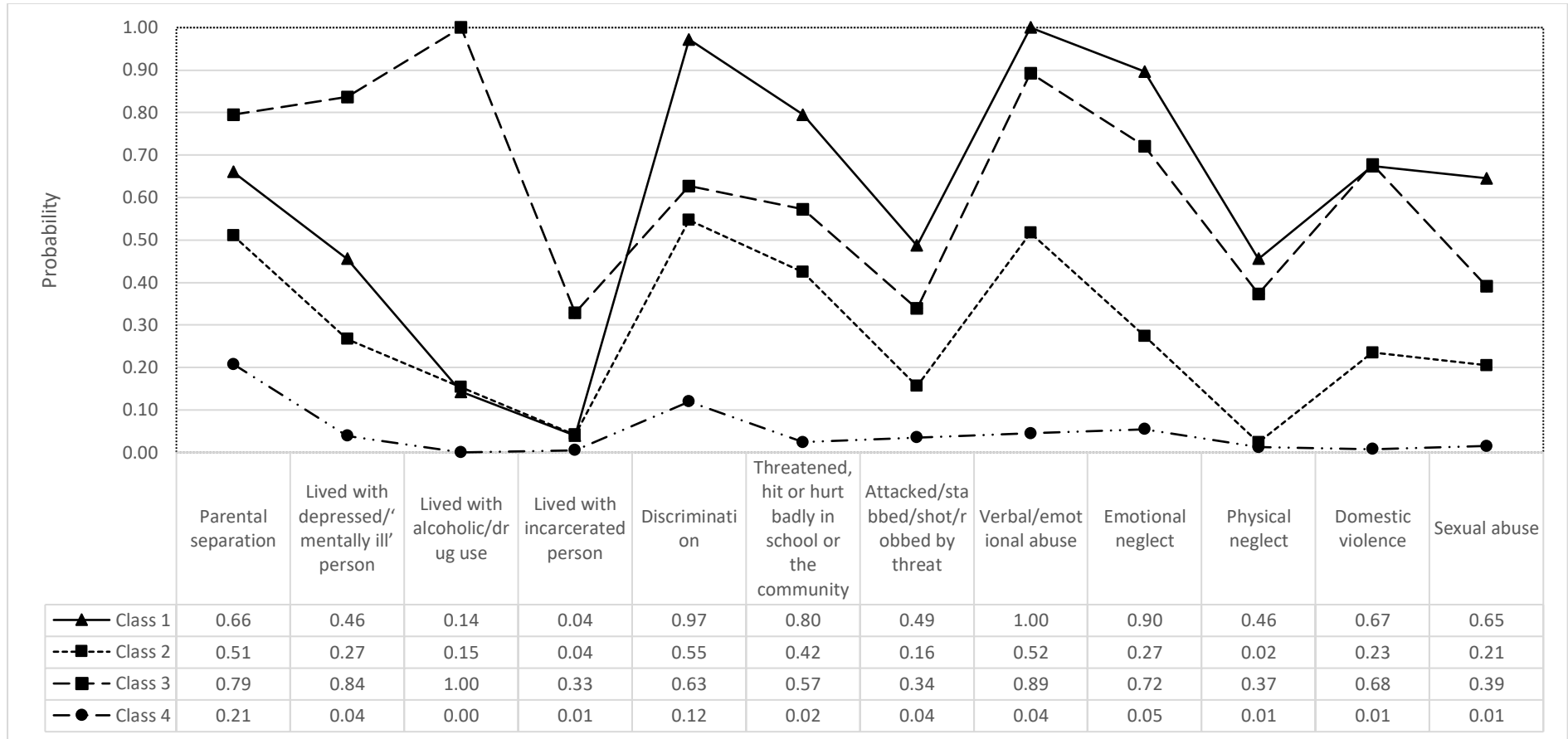
3 McGavock (2012)

# Alcoholic 9.7%, Drug user 4.1% (combined prevalence not recorded, but presumably lower than 13.8%)

Table 2. Fit Statistics for the Latent Class Models of Adversity Items.

Model	AIC	BIC	Sample-Size Adjusted BIC	LRM-A p	Entropy
1 class	10759.36	10816.33	10778.22		
2 classes	9582.96	9701.65	9622.25	1188.85 0.000	0.78
3 classes	9436.79	<b>9617.20</b>	9496.53	170.22 0.000	0.72
4 classes	9396.18	9638.31	9476.35	65.86 0.028	0.78
5 classes	9375.19	9679.04	<b>9475.79</b>	46.45 0.388	0.70
6 classes	9372.89	9738.46	9493.93	27.98 0.043	0.75

Figure 1. Latent Class Profile Plot of Adversities.



Class 1 (n=53: 6.2%), 'High adversity, moderate cohabitation problems'; Class 2 (n=393: 46.1%), 'Intermediate' class; Class 3 (n=99: 11.6%) 'High adversity' class; Class 4 (n=307: 36.1%), 'No Adversity' class

