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Academic and non-academic predictors of student psychological distress:

The role of social identity and isolation

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Abstract

Background: University students experience high rates of stress and mental illness; however, few studies have comprehensively examined the impact of academic and non-academic stressors on student mental health. Similarly, there has been little focus on the role of social groups in protecting against mental distress in this young adult group.

Aim: To identify the key social determinants of mental health symptoms in a student population.

Methods: Using an online survey, we administered measures of social connectedness and mental health symptoms alongside academic and non-academic stressors to a large sample of UK university students.

Results: Social isolation was the strongest overall predictor of mental distress, while assessment stress was the most important academic predictor. Strong identification with university friendship groups was most protective against distress relative to other social identities, and the beneficial impact of identification on symptoms was mediated by reduced social isolation.

Conclusions: The study highlights the benefits of establishing strong social connections at university and the importance of minimising stress associated with assessment tasks.

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Academic and non-academic predictors of student psychological distress: The role of social identity and isolation

Adolescence and early adulthood are known to be periods of peak risk for the onset of mental disorders (Kessler et al., 2007). Following the recent expansion in access to higher education in the UK, with a cohort entry rate for English school leavers reaching 42.1% in 2014 (University Central Admission Service, 2015), a substantial section of young people in this risk period are now studying at university. Indeed, a 2016 poll of over one thousand UK students found that more than a quarter of respondents suffered from a mental health problem (YouGov, 2016). Here, we aim to detail the prevalence of mental distress in the student population, to provide a comprehensive examination of the impact of academic and non-academic stressors on student mental health, and to identify social factors that might mitigate these issues.

Students experience psychological demands both inside and outside of the classroom. Financial, academic, and social-related stressors are some of the most common that university students encounter (Ross, Niebling, & Heckert, 1999). University-related stressors are a moderate predictor of depression; however, general life stressors have been found to be a more important determinant of depressive symptoms (Lester, 2014). Indeed, in a review of forty qualitative studies, it was found that relationship stressors (i.e., family, romantic, peer, and faculty relationships) were the most commonly reported source of stress among university students. Other commonly reported stressors included high expectations from oneself and others, and a lack of tangible coping resources such as time, sleep, support, and money (Hurst, Baranik, & Daniel, 2013).

Stressors encountered by students are similar to those in other professions, hence researchers have applied organisational psychology models, such as the Job Demands-Resources

Model (JD-R; Bakker & Demerouti, 2007), to student mental health (e.g., Pluut, Curşeu, & Ilies, 2015). The JD-R model asserts that high-pressure jobs place heavy demands on the mental and physical resources of employees (or students), which in turn lead to health problems and poor performance. Job resources, conversely, help people achieve work goals and reduce psychological distress. Like people in the workforce, students have resources upon which they can draw to help them cope with university life, including social (e.g., fellow students), psychological (e.g., self-esteem), and practical (e.g., student support services) resources. These resources may help alleviate some of the demands outlined earlier, such as financial strain and expectation stress. The JD-R model therefore seems appropriate to apply to student populations.

A study by Pluut and colleagues (2015) that applied the JD-R model found that academic stressors were associated with reduced well-being and poorer performance among Dutch university students. Moreover, conflict between leisure and study activities, along with social support, were moderate predictors of both academic satisfaction and academic performance, which suggests that psychosocial factors are important determinants of well-being and success in academic settings. Longitudinal evidence indicates that entering higher education has both positive and negative effects on mental health. A 2004 study found that among UK students who had no psychological symptoms at course entry, 9% became clinically depressed and 20% clinically anxious by the mid-point of their degrees. Financial stress and relationship difficulties were identified as the main predictors of depression and anxiety, respectively. However, during the course of the study, 36% of students with prior conditions showed some recovery, suggesting that universities may also afford positive effects on mental health (Andrews & Wilding, 2004). One plausible explanation for the improvements in mental health observed for these students is that universities provide opportunities for meaningful social connections. Indeed, social support

has been shown consistently to reduce stress in the workplace (see meta-analysis by Viswesvaran, Sanchez, & Fisher, 1999) and to protect people from developing mental health symptoms following exposure to stressors (Hagerty & Williams, 1999), particularly when those stressors are severe (Smith et al., 2013).

According to the Social Cure Model of health (Jetten, Haslam, & Alexander, 2012), when people feel bonded to a social group and the group is incorporated into their sense of self through the process of social identification (Tajfel & Turner, 1979), the group becomes a psychological resource that improves health both directly and indirectly. When the groups to which we belong are positive and successful, they foster positive emotions and enhance our sense of self-worth. Because of this, social identities are central to psychological health and well-being.

Social identity is distinct from social support, but tends to change the way social support is given and received. For example, the positive effects of workplace social support on employee training outcomes are most pronounced when people identify with their workplace (Pidd, 2004). Further, social support is more likely to be given, received, and effective when the support is built on a foundation of shared social identity (S. A. Haslam, Jetten, Postmes, & Haslam, 2009).

Social identity has also been shown to have a direct effect on symptoms of mental illness, such as depression (Cruwys et al., 2013; Cruwys, Haslam, Dingle, Haslam, & Jetten, 2014; Cruwys, South, Greenaway, & Haslam, 2015), paranoid ideation (McIntyre, Elahi, & Bentall, 2016; Sani, Wakefield, Herrera, & Zeybek, 2017; Thomas, Bentall, Hadden, & O'Hara, 2017), anxiety (Wakefield, Bickley, & Sani, 2013), well being, and post-traumatic stress (Swartzman, Booth, Munro, & Sani, 2017). Moreover, in line with the Social Cure Model and Tajfel and Turner's original conceptualization of identity, part of the relationship between social identification and better mental health can be explained by the notion that belonging to social

groups promotes more positive self-attributions (Cruwys et al., 2015; McIntyre, Wickham, Barr, & Bentall, 2017). Social groups can therefore be conceptualised as a psychological resource that provides people with fortification against distress by increasing the sense of belonging and self worth.

Higher education presents students with challenges and stressful circumstances, but also offers opportunities for deriving meaning, purpose and belonging through mastery and social connection. In the present research, we aim to detail the prevalence of mental distress in a student population and provide a comprehensive examination of student mental health by assessing a diverse set of social determinants, which include academic stressors such as performance and assessment stress, as well as social connection (e.g., social isolation and social identification) and background variables (e.g., childhood deprivation and maltreatment) known to be associated with poor mental health (Cruwys et al., 2014; Hill, 2003; McIntyre et al., 2017; Varese et al., 2012). We also look at more stressors likely to be relevant to young people attending university, such as cyberbullying, financial stress, and poor living conditions. We examine these stressors in the context of three distinct mental health symptoms: depression, anxiety, and paranoia, which are common among young adults and have been associated with social determinants (Cruwys et al., 2014; Lee & Robbins, 1998; McIntyre et al., 2017). A final aim was to test whether identification with university-relevant groups can be considered a psychosocial resource that reduces symptom risk, and to identify the mechanisms by which social groups might improve mental health.

Method

Participants and design

The online survey was conducted in October 2016 across the faculties of a large university in northern England. A total of 1545 students attempted the survey. Surveys missing more than 25% of responses were considered incomplete, leaving a final sample of 1135. Students from all three faculties completed the survey: Health and Life Sciences (30%), Humanities and Social sciences (42%) and Science and Engineering (18%). First-year students comprised 46% of the sample, while second- and third-year students made up 35% and 21%, respectively. The majority of participants were from white ethnic backgrounds (82%). Seventy-one percent identified as female and 26% identified as male. The average age of participants was 20.78 years, SD = 4.35.

Measures

Academic stress

We administered an adapted 15-item version of the Academic Stress Scale (Kohn & Frazer, 1986). Three sub-scales consisting of five items each tapped how stressed students were about performance (e.g., “Final grades”; $\alpha = .75$), teaching (e.g., “Fast paced lectures”; $\alpha = .72$), and facilities (e.g., “Poor access to computing facilities”; $\alpha = .79$). Response options ranged from 1 = not at all stressed to 5 = extremely stressed. Some of the original items that were irrelevant (e.g., forgetting pencil/pen) were either dropped or modified to reflect modern learning environments. See supplementary materials (Appendix A) for the complete modified scale.

Performance and expectations stress

Social isolation

The eight-item UCLA Loneliness Scale (ULS-8) assesses how withdrawn people are from social relationships and companionship (e.g., “I feel isolation from others” and “people are around me but not with me”). The scale showed good internal consistency $\alpha = .87$.

Social identity

We included a three-item scale adapted from Doosje, Ellemers, and Spears' (1995) measure of in-group identification. Participants responded to each of the three items for six different social groups (18 items in total). Specifically, they indicated the extent to which they felt “strong group ties”, “belonging”, and “identification” with each group. Groups were selected that were a) likely to be important to university students, b) likely to be relevant to the majority of participants, and c) had the potential to be incorporated into university social connection programs. These identities included: country of birth ($\alpha = .90$), England ($\alpha = .92$), university city ($\alpha = .91$), university ($\alpha = .87$), primary online community ($\alpha = .91$), and university friends ($\alpha = .93$).

Living conditions

Living conditions were assessed with three items taken from the English Housing Survey (Department for Communities and Local Government, 2015). The items assessed accommodation-related health issues (Does the condition of your accommodation affect your health in any way? Anchors: 1 = all of the time, 4 = never), house maintenance (Overall, how satisfied are you with the way your landlord repairs and maintains your home? Anchors: 1 = very satisfied, 5 = very dissatisfied), and mould (During the winter months, are there patches of mould or fungus in any room in your home, apart from bathrooms or toilets? Options: 1 = no, 2 = yes). Because the items were measured on different scales, a Principal Components analysis was

performed. The analysis yielded a single factor with an eigenvalue of 1.31 which accounted for 43.65% of the variance in the data. The derived factor scores constituted the living conditions variable.

Financial worry

The Debt Worry Scale (Cooke, Barkham, Audin, Bradley, & Davy, 2004) consists of two items: “Are financial concerns a current issue?” and “To what extent does your debt worry you?”. Participants responded on a five-point scale ranging from 1= not at all to 5 = a lot. The two items were highly correlated, r(1133) = .75.

Perceived discrimination

Participants completed the two-item Perceptions of Discrimination scale (Major, Kaiser, O'brien, & McCoy, 2007) for five different types of potential discrimination (10 items in total). Items included “My [group] is discriminated against” and “Other members of [my group] experience discrimination”. Participants responded to both items for each of the following groups: ethnicity, gender, sexuality, disability, and religion/beliefs. Pearson’s rs ranged from .82 to .90. Response options ranged from 1 = strongly disagree to 7 = strongly agree.

Cybervictimisation

Participants answered two items adapted from Hinduja and Patchin (2010) related to the frequency with which they had experienced “cyberbullying” and “cyberstalking”. Response options ranged from 1 = never to 6 = very often, r(1133) = .45.

Childhood disadvantage

Participants completed the 12-item Perceived Inequality in Childhood Scale (Wickham, Shevlin, & Bentall, 2013). For example, “In comparison to other children in your school and

neighbourhood, your parents' involvement in your education was:" 1 = far less to 5 = significantly more, α = .83.

Childhood maltreatment

The ten-item ACEs scale (Felitti et al., 1998) assesses childhood abuse (e.g., "Did a parent or other adult in the household often push, grab, slap, or throw something at you? Or ever hit you so hard that you had marks or were injured?") and maladaptive family environments (e.g., "Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?"). The total number of "yes" responses was tallied.

Paranoia

Paranoia was assessed with an abbreviated five-item persecution subscale of the persecution and deservedness scale (PaDS; Melo, Corcoran, Shryane, & Bentall, 2009). For example, "You should only trust yourself". Response options ranged from 1 = strongly disagree to 5 = strongly agree, α=.84.

Depression

Depression was measured with the nine-item Patient Health Questionnaire (PHQ-9; Kroenke & Spitzer, 2002). Participants indicated how often they had been bothered by problems such as "Feeling down, depressed, or hopeless" and "Thoughts that you would be better off dead" over the last two weeks. Response options ranged from 1 = not at all to 4 = nearly every day, α=.89.

Anxiety

The Generalized Anxiety Disorder-7 (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006) is a seven-item scale that assesses frequency of anxious symptoms over the past two

weeks, e.g., “worrying too much about different things”, using the same response options as the PHQ-9. Response options ranged from 0 = not all to 3 = nearly every day, α=.92.

Self-harm

Four self-harm items were taken from separate sources. Item 1 (“During the past 12 months, did you ever seriously consider attempting suicide?”) was adapted from the Youth Risk Behaviour Surveillance System survey ("Youth Risk Behavior Surveilance System (YRBSS)," 2015). Item 2 (Have you deliberately hurt yourself without trying to kill yourself anytime in the last year?) was taken from the revised Diagnostic Interview for Borderlines (Zanarini, Gunderson, Frankenburg, & Chauncey, 1989). Items 3 and 4 (adapted from Plöderl, Kralovec, Yazdi, & Fartacek, 2011) asked participants about suicidality and non-suicidal self-injury, e.g., “I hurt/harmed myself but I knew that I would not have died from this”.

Results

Extent of mental health issues

All analyses were conducted using SPSS version 22 software (Nie, Bent, & Hull, 1970). As shown in Figure 1, using the published criteria for moderate anxiety (10-14; Spitzer et al., 2006) and depression (10-14; Kroenke & Spitzer, 2002), the proportion of students above these cuts off was 42.2% for anxiety, and 25.0% for depression, and 22.2% for comorbid depression and anxiety. Using the more stringent criteria (GAD-7: 15-21, PHQ-9: 15-27), 20.9% met criteria for severe anxiety, 11.3% met criteria for severe depression, and 9.0% met the severe criteria for both. No cut-offs are available for the paranoia scale.

In total, 18.9% of students reported suicidal thoughts during the last 12 months and 20.1% reported that, at some time in their lives, they had self-harmed. Of the entire sample,

12.1% reported a lifetime suicide attempt. From Table 1 it can be seen that the majority of these incidents were regarded as not life-threatening, whilst 2.5% of the entire sample reported a determined suicide attempt.

Academic and non-academic stressors

To understand how an accumulation of stress factors impact on mental health, a series of hierarchical regressions were conducted to determine which stressors were the most important determinants of symptoms. We included depression, anxiety, and paranoia as dependent variables. Predictor variables were entered into the model at different blocks, with each block representing a distinct cluster of associated stressors. Entering the variables in this manner allowed us to examine the role of categories of stressor and also individual stressors. Listwise deletion was used to account for missing values. Variables were entered into the model predicting each symptom as follows: Block 1: Demographic variables (Age, gender, ethnicity); Block 2: Childhood adversity (childhood trauma, childhood deprivation); Block 3: Economic adversity variables (living conditions, financial stress); Block 4: Discrimination variables (ethnicity, gender, sexuality, religion/beliefs, disability, cybervictimisation); Block 5: Social identity variables; Block 6: Social isolation; Block 7: Academic Stressors (performance, expectations, assessment, teaching, facilities).

Depression

As shown in Table 2, at Block 1 the demographic variables explained a significant portion of variance in depression. While age and ethnicity were unrelated to depression, women reported significantly higher levels of depression than men, $\beta=.09$, $p=.014$.

At Block 2, the childhood adversity variables contributed significantly to the model. Childhood deprivation was unrelated to depression, while having more experiences of childhood trauma was significantly associated with higher depression scores, β=.27, p <.001.

At Block 3, the inclusion of the economic adversity measures contributed significantly to the model. Both higher levels of financial stress (β=.25, p< .001) and poor living conditions (β= -.09, p=.012) were associated with higher levels of depression.

At Block 4, the discrimination variables explained a unique and significant portion of the variance in depression. Experiencing higher levels of discrimination based on one's disabilities (β =.10, p=.010) or sexuality (β=.14, p< .001) predicted higher levels of depression, as did more experiences of cybervictimisation, β=.09, p = .013. All other discrimination variables were unrelated to depression.

At Block 5, the social capital variables contributed significantly to the model. This was primarily due to the inclusion of university friendship group identity, which was the only significant predictor of depression at this block, β= -.26, p<.001.

At Block 6, social isolation also contributed significantly to the model. Students who reported feeling more isolated also reported higher levels of depression (β= .52, p<.001).

Finally, at Block 7, academic stressors also contributed significantly to the model. Both performance stress (β=.14, p< .001) and assessment stress (β=.17, p< .001) were associated with higher levels of depression. No other academic stressors significantly predicted depression.

Anxiety

As reported in Table 3, at Block 1 the demographic variables explained a significant portion of variance in anxiety. Age was unrelated to anxiety; however, women reported

significantly higher levels of anxiety compared to men (β=.11, p=.002), and white students reported higher levels of anxiety compared to Black and Minority Ethnic students, β= -.10, p=.009.

At Block 2, childhood adversity contributed significantly to the model predicting anxiety. Childhood deprivation was unrelated to anxiety; however, having more experiences of childhood trauma was significantly associated with higher anxiety scores, β=.27, p< .001.

At Block 3, the inclusion of the economic adversity measures contributed significantly to the model. Both higher levels of financial stress (β=.25, p< .001) and poor quality accommodation (β= -.10, p=.004) were associated with higher levels of anxiety.

At Block 4, the discrimination variables explained a significant portion of variance in anxiety. Experiencing higher levels of cybervictimisation (β=.11, p=.003) and discrimination based on one's disabilities (β =.11, p=.005) was associated with higher levels of anxiety. All other discrimination variables were not significant predictors of anxiety.

At Block 5, the social capital variables contributed significantly to the model. Identifying more strongly with a friendship group was associated with lower levels of anxiety (β= -.25, p<.001) and identifying more strongly with England was also associated with lower levels of anxiety (β = -.10, p=.017).

At Block 6, social isolation contributed significantly to the model. Feeling isolated was strongly associated with higher levels of anxiety (β=.50, p<.001).

At Block 7, academic stressors explained a significant amount of variance in anxiety. Assessment stress was the only significant predictor of anxiety (β =.23, p<.001). Students who felt more stressed about their assessment tasks reported higher levels of anxiety.

Paranoia

As shown in Table 4, at Block 1 the demographic variables as a set explained a significant portion of the variance in paranoia. However, no individual demographic predictors reached significance.

At Block 2, the childhood adversity variables contributed significantly to the model. While there was no effect of childhood deprivation, having more experiences of childhood trauma was significantly associated with higher paranoia scores, $\beta=.28$, $p< .001$.

At Block 3, the inclusion of the economic adversity measures contributed significantly to the model. Both poor quality accommodation ($\beta= -.09$, $p=.013$) and higher levels of financial stress ($\beta=.16$, $p< .001$) were associated with higher levels of paranoia.

At Block 4, the discrimination variables explained a significant portion of variance in paranoia. Reporting the experience of higher levels of cybervictimisation ($\beta=.22$, $p< .001$) and discrimination based on one's sexuality ($\beta=.11$, $p=.004$) were each associated with higher levels of paranoia. All other discrimination variables were not significant predictors of paranoia in this sample.

At Block 5, the social capital variables contributed significantly to the model. Identifying more strongly with a friendship group was associated with lower levels of paranoia ($\beta= -.21$, $p<.001$).

At Block 6, social isolation contributed significantly to the model. Feeling socially isolated was associated with higher levels of paranoia ($\beta=.46$, $p<.001$).

At Block 7, academic stressors also contributed significantly to the model. However, no individual academic stressor significantly predicted paranoia.

Relationships between social identification and mental health

To test the relationship between identification and mental health we ran a series of multiple regressions. The five different types of social identification (identification with: England, university city, university, online community, university friends) were entered into the models as predictors of each mental health symptom.

Social identity and depression

Together, the five social identity variables accounted for 10% of the variance in depression scores. Results of the multiple regression predicting depression revealed that stronger identification with England ($\beta = -.09$, $p = .006$) and university friends ($\beta = -.28$, $p < .001$) predicted lower levels of depression. University identification also marginally predicted lower depression ($\beta = -.07$, $p = .050$). Unexpectedly, identification with university city was associated with higher levels of depression in the model, $\beta = .07$, $p = .049$[1]. Identification with university friends was clearly the most important predictor of lower depression, explaining 5% of the variance in depression after taking into account the effects of all other social identities, $sr^2 = .05$.

Social identity and anxiety

Combined, the five social identity variables explained 9% of the variance in anxiety scores. When examining the individual predictors, stronger identification with England ($\beta = -.11$, $p = .001$) and university friends ($\beta = -.26$, $p < .001$) predicted lower levels of anxiety, while stronger identification with university city predicted higher levels of anxiety ($\beta = .09$, $p = .016$). Identification with university friends was the strongest independent predictor of lower anxiety, explaining 5 % of the variance in anxiety after taking into account the effects of all other social identities, $sr^2 = .05$.

Social identity and paranoia

The five measures of social identity, together, accounted for 7% of the variance in paranoia scores. University friends identification emerged as the only significant predictor of paranoid symptoms, $\beta = -.23$, $p < .001$. Stronger identification with university friends was associated with lower paranoia. University friends identification explained 4% of the variance in paranoia scores, controlling for all other social identities, $sr^2 = .04$.

Mediation models

Given that the previous analyses suggested that identifying with university friends was more protective than the other measured identities, we investigated whether this effect is best understood by the notion that when people identify with a university friendship group they feel less isolated. The mediation models controlled for the effects of age, ethnicity, and gender. We first tested whether friendship group identification and social isolation were correlated. If the correlation was too high (i.e., > .70), then it would not be possible to continue with the mediation because it would be likely that the scales were measuring the same construct. The two variables correlated at -.52 so we proceeded with the mediation analyses. Mediations were conducted in SPSS using the PROCESS extension (Hayes, 2012). Indirect effects and associated confidence intervals were calculated via bootstrapping with 1000 resamples.

Social isolation mediated the relationship between friendship group identification and mental health for depression (IE = -.30, CI[-.34,-.27]), anxiety (IE = -.42, CI[-.48,-.36]), and paranoia (IE = -.36, CI[-.41,-.31]) . The percentage of the total effect that was mediated by social isolation was 92% for depression, 98% for anxiety, and 100% for paranoia. Of note, we also ran mediation analyses with identification and isolation switched in the model to test whether feelings of social isolation may make it more difficult for people to form friendships and

friendship group identities. None of these models were significant, supporting the hypothesis that identity affects feelings of isolation rather than vice versa.

Discussion

We conducted a comprehensive mental health survey of students attending a large university in northern England. We aimed to assess the prevalence of severe mental distress in the student population, and to identify key stressors and protective factors. Overall, there were high rates of mental distress in our sample, with particularly elevated rates of clinically severe anxiety (21%) and depression (11%), in addition to high comorbidity (9%). One fifth of students reported suicidal thoughts but only 2% reported a determined suicide attempt. Contextual factors including childhood adversity, economic deprivation, discrimination, and social isolation all contributed to poor mental health. Of note, our complete set of social determinants were able to explain nearly half of the variance in both depression and anxiety, and over a third of the variance in paranoia. Of the academic variables, assessment and performance stress were most predictive of mental distress.

Overall, feelings of isolation consistently emerged as the strongest predictor of poor mental health. Planned analyses of the social identity variables suggested that university friends are the most important social group with whom to identify in order to protect against depression, anxiety, and paranoia. Follow-up mediation analyses confirmed that identifying with university friends alleviated these symptoms by decreasing feelings of isolation. The findings are consistent with a growing body of literature on social cure models of mental health (Cruwys et al., 2013; Cruwys et al., 2014; Cruwys et al., 2015; McIntyre et al., 2016; Sani et al., 2017), but additionally demonstrate that bonds formed with fellow students at university are particularly

important for maintaining mental health. The reverse mediations provided evidence for the proposed causal pathway, as does recent evidence that interventions designed to foster group memberships improve both social connectedness and mental health (C. Haslam, Cruwys, Haslam, Dingle, & Chang, 2016). Despite this, the proposed causal relationships reported here should be interpreted with some caution given the cross-sectional nature of the data. Indeed, it is plausible that the observed relationships are cyclical in that academic stressors lead to poor mental health, which in turn impacts on a student's ability to study, leading to stress. Moreover, mental health symptoms can make it more difficult for people to join and identify with social groups. Studies examining university interventions designed to foster group memberships, and longitudinal work assessing changes in mental health and stress over time, would help to address these limitations. A further limitation of the study is that our sampled population attended a single British university. Thus, it is not clear whether the observed effects would permeate geographic and cultural boundaries. Finally, the anxiety and depression measures specifically assessed distress over a two week period, which meant we were unable to examine the impact of stressors on chronic mental health conditions.

The findings suggest that academic stressors place heavy demands on psychological resources, and that students are at high risk of mental health issues. However, campus environments also represent opportunities for students to develop meaningful social connections that are beneficial to their mental health. By increasing awareness of the importance of social groups and by positively enabling, facilitating, and resourcing the organization of social events and communities of interest, universities may be able to enhance the efficacy of existing social connection programs to achieve improvements in student mental health. Given our findings, it will be important to focus these interventions on smaller group connections (e.g., seminar groups

or degree programs) as opposed to superordinate groups such as faculties or universities. Universities and students would also benefit by reducing stress related to assessment and performance. One practical measure involves facilitating the formation of study groups that will provide opportunities for students to connect with people facing similar academic demands, and simultaneously foster group memberships.

The findings are consistent with the JD-R model of mental health insofar as we found that students are subjected to a range of academic and non-academic demands that contribute to symptomology. However, universities also provide resources such as opportunities to form social connections and new identities, and also to reduce stressors related to concerns over performance and assessment tasks. Our findings are consistent with work by Pluut et al. (2015) who also applied the JD-R model to students, finding that academic stressors contributed to low well-being and performance, while social support enhanced satisfaction and performance.

Consistent with substantial previous work (Hill, 2003; Morrison, Frame, & Larkin, 2003; Shevlin, Dorahy D Clin Psych, & Adamson, 2007; Varese et al., 2012), the findings suggest the negative psychological effects of childhood trauma flow through to young adulthood. Ensuring universities are aware of the potential impact of background stressors, which, when combined with academic stressors, may place students at particularly high risk of severe symptoms is particularly important according to the present findings. Indeed, it may be that measures to proactively identify those most at risk of distress by making confidential enquiries into the area of previous trauma is something that universities should consider as a matter of routine. This information could then be provided, with the consent of the student, to counseling and disability services for information if a student presents with difficulties. Of course, the acquisition of this

information would need to be handled in a sensitive manner and with full disclosure to students regarding the use of information.

Our work provides a comprehensive overview of the types of stressors most likely to impact student mental health. We also identify ways that universities can furnish students with social and psychological resources to minimise their distress. As student numbers continue to rise, there is likely to be increasing pressure on institutions to ensure students' mental health and well-being. We hope that this work will usefully inform future policies and interventions designed to achieve this aim.

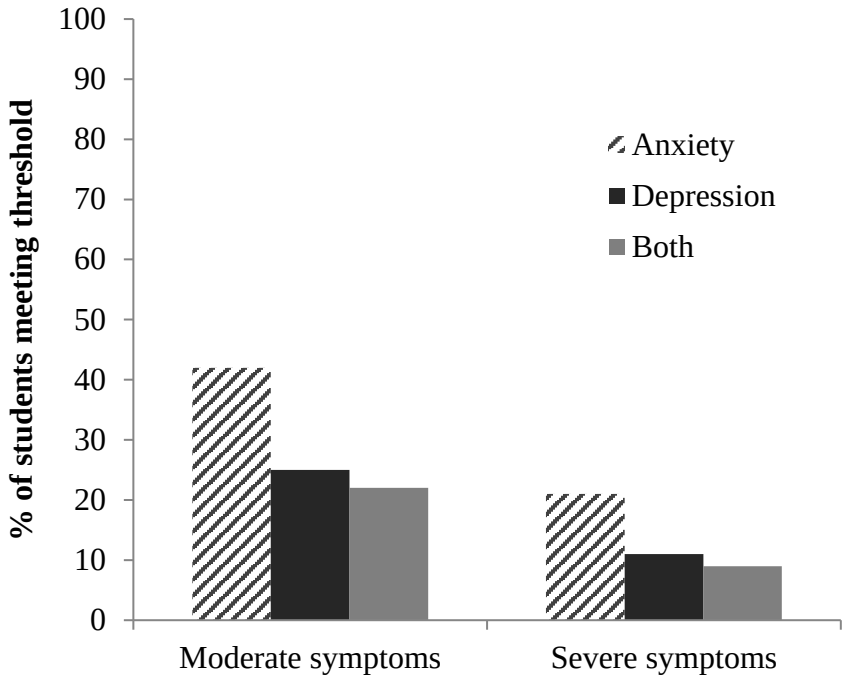

Figure 1. Proportion of students in the sample meeting the criteria for moderate and severe mental health symptoms.

Table 1.

Types of self-harm among students reporting suicidal thoughts.

	Frequency	% of total sample	% of valid reports	Cumulative % of valid reports
I only thought seriously about hurting/harming myself	16	1.5	12.2	12.2
I had everything prepared but did not hurt/harm myself	22	2.1	16.8	29.0
I stopped hurting/harming myself in the last second. I knew that it would not have been lethal	15	1.4	11.5	40.5
I hurt/harmed myself, but I knew that I would not have died from this	51	4.8	38.9	79.4
I hurt/harmed myself and I knew that I would die from this	27	2.5	20.6	100.0
Total	131	12.3	100.0	

Table 2.

Hierarchical regression analysis of stressors predicting depression

	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
Sex	.09*	.07	.03	.03	.07*	.04
Age	-.05	-.09*	-.09*	-.08*	-.06*	-.05
Ethnicity	-.07	-.05	-.01	-.02	.01	.01
Childhood trauma		.27***	.23***	.21***	.18***	.18***
Childhood deprivation		-.03	.00	.02	.11**	.10**
Living conditions			-.09*	-.08*	-.03	-.02
Financial stress			.25***	.23***	.16***	.10**
Ethnicity discrimination				.00	-.04	-.05
Gender discrimination				-.00	.00	-.00
Sexuality discrimination				.14***	.09**	.10**
Religion discrimination				-.05	-.06	-.06
Disability discrimination				.10*	.07*	.05
Cybervictimisation				.09*	.06*	.05
Social isolation					.52***	.42***
University identity					-.05	-.01
Country identity					.00	.02
Online identity					.02	.02
University city identity					.04	.00
English identity					-.04	-.05
University friends identity					.00	.00
Academic expectations						.01
Performance stress						.14***
Assessment stress						.17***
Teaching-related stress						.04
Facilities stress						.01
F_{change}	4.02**	30.29***	29.40***	6.44***	42.30***	14.14***
R^2_{change}	.02	.08	.07	.04	.24	.05
$R^2_{adjusted}$	.01	.09	.16	.20	.43	.48

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 3.

Hierarchical regression analysis of stressors predicting anxiety

	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
Sex	.11**	.09*	.06	.04	.08**	.05
Age	-.01	-.05	-.05	-.04	-.03	-.01
Ethnicity	-.10**	-.08*	-.05	-.04	.01	-.01
Childhood trauma		.27***	.23***	.20***	.18***	.17***
Childhood deprivation		-.02	.01	.03	.11**	.09**
Living conditions			-.10**	-.09**	-.04	-.04
Financial stress			.25***	.24***	.17***	.10**
Ethnicity discrimination				-.00	-.03	-.05
Gender discrimination				.03	.02	.01
Sexuality discrimination				.06	.00	.03
Religion discrimination				-.06	-.08*	-.07*
Disability discrimination				.11**	.08*	.06
Cybervictimisation				.11**	.07*	.05
Social isolation					.50***	.39***
University identity					-.02	.01
Country identity					-.03	-.02
Online identity					.05	.03
University city identity					.07	.04
English identity					-.09*	-.09*
University friends identity					.01	-.01
Academic expectations						.03
Performance stress						.03
Assessment stress						.23***
Teaching-related stress						.08
Facilities stress						.04
F_{change}	5.66**	28.52***	32.50***	4.82***	39.52***	20.53***
R^2_{change}	.02	.07	.08	.03	.23	.07
$R^2_{adjusted}$	.02	.09	.17	.19	.42	.49

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4.

Hierarchical regression analysis of stressors predicting paranoia

	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
Sex	.07	.04	.02	-.01	.02	.00
Age	-.07	-.11**	-.12**	-.09*	-.07*	-.06
Ethnicity	-.03	-.01	.01	-.03	-.00	-.00
Childhood trauma		.28***	.25***	.20***	.18***	.18***
Childhood deprivation		-.05	-.03	-.02	.04	.03
Living conditions			-.09*	-.08*	-.04	-.03
Financial stress			.16***	.13***	.07*	.03
Ethnicity discrimination				.06	.04	.02
Gender discrimination				.03	.04	.03
Sexuality discrimination				.11**	.07*	.08*
Religion discrimination				.01	-.01	-.01
Disability discrimination				-.01	-.04	-.06
Cybervictimisation				.22***	.20***	.18***
Social isolation					.46***	.40***
University identity					-.06	-.04
Country identity					.01	.01
Online identity					.00	-.01
University city identity					.10*	.08*
English identity					-.02	-.01
University friends identity					.03	.02
Academic expectations						.05
Performance stress						.01
Assessment stress						.06
Teaching-related stress						.08
Facilities stress						.04
F_{change}	2.73*	34.18***	13.77***	10.98***	27.43***	5.19***
R^2_{change}	.01	.09	.03	.08	.17	.02
$R^2_{adjusted}$	.01	.09	.13	.19	.36	.38

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 5.

Bivariate correlations between social identity and mental health variables.

Variable	M	SD	Depression (PHQ-9)	Anxiety (GAD-7)	Paranoia (PaDS-5)
Country of birth ID	15.88	4.18	-.19***	-.16***	-.16***
English ID	14.48	4.43	-.17***	-.17***	-.13***
University city ID	15.11	3.86	-.12***	-.09**	-.11***
University ID	15.10	3.86	-.19***	-.15***	-.15***
University friends ID	15.37	4.17	-.31***	-.27***	-.25***
Online ID	16.02	4.08	-.09**	-.06*	-.08**
Isolation	19.49	5.25	.58***	.54***	.53***

* $p < .05$, ** $p < .01$, *** $p < .001$

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Notes

1. Zero-order correlations between friendship group identity and depression indicated that higher identification with university city was associated with lower levels of depression, $r(1133) = -.12$, $p < .001$. Thus, the positive relationship observed in the multiple regression was likely due to suppression by one or more of the other categories of identity entered into the model.