Life events, depression and supportive relationships affect academic achievement in university students

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Background. Students often simultaneously deal with shifting support networks, stressful life changes and psychological distress which may affect academic achievement.

Methods. 285 students completed the General Health Questionnaire (GHQ-12) to assess depression and the Computerised Life Events Assessment Record (CLEAR), to establish life events and supportive relationships. Module grades were used to measure academic achievement. A general linear model was used with student grade as the dependent variable and life events, depression and supportive relationships as independent variables. Confounding variables included age and sex.

Results. A three-way interaction between life events, depression and lack of supportive relationships was found. It indicated the performance of depressed students depended on whether they had supportive relationships and that this interaction also depended on whether they had experienced a life event in the past year.

Conclusions. Universities need to provide more support to students with life stress as they transition into university life.

Keywords: life events; depression; supportive relationships; academic achievement; students

Mental health problems are a major challenge for undergraduate students, affecting their health and academic performance. Sadly, the prevalence of mental health problems in university students is high[1] and continuing to rise.[2] Recent estimates by the American College Health Association suggest 19% of students have depression and 24% have anxiety.[3] Indeed, there is evidence suggesting levels of psychological distress amongst university students are greater than similar age groups within the general population. The Student Academic Experience Survey found only 16% of university students reported life satisfaction, compared to 27% of adults aged 20-24.[2,4]

This is partly explained by age; adolescence and emerging adulthood represents the peak onset for mental health problems[5], especially in females.[6] However, this is also a time of increased flux as individuals make the transition into adulthood, taking on more of the associated responsibilities.[7] Life events, are discrete experiences that cause substantial change and readjustment. Those leading to more extensive and permanent change (e.g. moving away from home versus changing job) are considered more stressful. Added to the usual changes associated with emerging adulthood, students have to adapt to university life. This may include losing old support networks and the creation of new ones, finding accommodation and struggling with debts,[8] as well as increased educational and work pressures. Indeed, students report high levels of negative events, including illness and bereavements, finances and relationships[3] and their levels of distress may be greater than similar age groups within the general population.[4]

It is well established that severe life events can predict depression.[9,10] Interpersonal relationships in particular, are both a source of life satisfaction and a stressor as students adapt to university life.[2,11] Students often report negative relationship events (e.g. major arguments, breakups, infidelity) to be a main contributor to depression,[10,12] although lacking close relationships is also associated with a greater likelihood of depression in this age

group.[13,14] Therefore, the ability to form supportive close relationships may contribute to risk or resilience for depression.[15]

Thus, many students are trying to complete their studies whilst adjusting to new stressful demands, changes to their support network and managing psychological distress. Each of these issues impacts on student performance. Mental health problems decrease student retention rates and increase the likelihood of failing.[8] Students with a psychological disorder are more likely to report academic impairment, with the level of impairment increasing alongside the level of mental health difficulty.[16] Depressed students that report missing a greater number of classes, exams and assignments, are more likely to drop classes and have a lower grade point average.[12] Experiencing negative life events can lower academic performance,[17] delay progress towards their degree[3] and increase the likelihood of burnout amongst students.[18] Supportive relationships are associated with reduced drop out[18] and better grades,[20,21] whilst the converse is true of those with poorer relationships.[22] Thus, there is evidence that mental health, life events and social support all separately effect academic performance. However, what is less well-known is the combined effect of these factors.

Issues of emotional resilience, shifting support networks and life changes are particularly interconnected in the student experience.[2] and qualitative studies highlight students having to cope with these issues simultaneously,[11] yet they have not been studied in tandem. Only one study by Andrews and Wilding[23] has examined how severe life events predict academic performance over and above mental health problems. They found adverse life experiences contributed to psychological disorder and both predicted decreased exam performance. However, they did not look at the contribution of supportive relationships. This study seeks to address this gap by exploring how academic achievement is affected by severe life events, depression and supportive relationships and whether these interact.

Methods

Participants

Participants were 285 psychology students (254 female, 30 male, missing = 1), mean age

20.3 (range: 17-46 years, SD = 3.85), 67% from Black Asian Minority Ethnic (BAME)

backgrounds. The majority of respondents (97%) were first year students, expected to have

experienced more recent life changes. In addition, recruitment targeted psychology students

where course credit could be offered. All participants were provided with information about

the study and consented to take part. Ethical approval was granted from the university's

Psychology Department's Ethics Committee. A sample size of 77 was needed at a 95%

confidence interval (α = 0.05), assuming a power of 0.8 and a medium effect size (f^2 = .15).

Measures

Computerised Life Events Assessment Record (CLEAR[24])

CLEAR is a new intensive online tool which mimics the detail and context captured by

interview measures such as the Life Events and Difficulties Schedule.[25] It records all life

events experienced over the last 12 months across 12 domains (e.g. education, housing,

money, health, relationships). It also rates threat/unpleasantness from 1: *Extremely* to 5: *Not*

at all based on the LEDS interview procedures.[25] Severe events are those rated ≥3 on

threat/unpleasantness, occurring to the respondent alone or jointly (respondent and someone

close). CLEAR also records information about close confiding others, defined as individuals

the respondent can go to for help and support. Respondents can record that they are not

close/confiding with anyone. Supportive relationships were dichotomized to yes/no based on

whether they entered details of close others. high test-retest reliability for severe events (K

= .60) and demonstrates a good association between severe life events and depression (OR = 3.50, $p < .001$).[24]

General Health Questionnaire (GHQ-12[26])

The GHQ-12 is a 12-item self-report questionnaire describing symptoms of depression experienced in the last 2 weeks. Response categories are dichotomized and given a rating of '1' if either of the two most frequent symptom responses are endorsed (e.g. '*more so than usual*') or '0' if either of the two least frequent symptom responses are endorsed (e.g. '*much less than usual*'). This gives a score from 0 to 12, a score ≥ 5 indicates depression.[27] The measure had high internal consistency ($\alpha = .89$). There is also evidence demonstrating its good retest reliability ($r = .73$)[28] and validity as a measure of depression, with good associations with existing screening measures ($r = .70$)[28] and psychiatric interviews (AUC = .80).[29]

Grades

Students complete four modules throughout the year, assessed using a combination of exams, essays and reports. In this UK-based scheme lower median grades reflect better academic performance. Modules are graded first class (scores range: 1-4.49, $\geq 70\%$), upper second (scores range: 4.50-8.49, $\geq 60\%$), lower second (scores range: 8.50-12.49, $\geq 50\%$), third (scores range: 12.50-16.49, $\geq 40\%$) and fail (scores range: 16.50-20.00, $\leq 39\%$). An overall grade was calculated based on the median of the individual module grades as this was less likely to be skewed by any one specific module result.

Analysis

A general linear model (GLM) was used to investigate whether academic achievement was significantly different amongst students with and without severe life events, depression and

supportive relationships after adjusting for confounding variables. The dependent variable was median student grade, the independent variables were severe life events (Yes/No), depression (Yes/No) and supportive relationships (Yes/No). Confounding variables included age and sex. Main effects and interaction effects were explored. Simple effects were calculated to determine where significant interactions occurred.

Results

A total of 17% of students had a median first class grade, 44% with a median upper second class grade, 25% with a median lower second class and 13% with a median third class or failing grade. Over one third of respondents (38%) had reported at least one severe life event during the previous year using CLEAR (mean = .68, SD = 1.10, range: 0-6) and just over a quarter (26%) reported having symptoms of depression at a probable case level. Almost a third of students (32%) reported feeling close to no-one.

The effect of depression, supportive relationships and life events on academic grade was explored. The model accounted for 8.6% of the variance in median grades. There were significant main effects for depression and supportive relationships (see Table 1). Those with depression had significantly worse median grades (B = 1.19, p = .026) as did those with no supportive relationships (B = 1.67, p = .001).

Interaction terms were added; there was a significant three-way interaction between severe life events, supportive relationships and depression and the model accounted for 13.4% of the variance (see Table 1). Simple effects showed depressed students with supportive relationships did significantly better when they had experienced a severe life event ($F(1, 268)$ = 4.06, p = .045). Additionally, in the absence of a life event, students who were not depressed did significantly better when they had supportive relationships ($F(1, 268)$ = 24.02, p < .001) and students who had supportive relationships did significantly better when

they were not depressed (F (1,268) = 14.50, $p < .001$). In the absence of a life event, depressed students did better when they did not have supportive relationships, although this just missed significance (F(1, 268) = 3.84, $p = .051$).

Discussion

The present study was the first to investigate how student academic performance was affected by severe life events, depression and supportive relationships and found a significant three-way-interaction. The academic performance of depressed students depended on whether or not they had supportive relationships and this interaction between depression and supportive relationships also depended on whether they had experienced a severe life event in the past year. Depressed students had better academic results if they had supportive relationships, and had experienced a severe life event. Social support is shown to ameliorate the negative effects of depression on academic performance[30], this study implies the support needed to be activated by the stressor. Additionally, similar to previous research both depression and a lack of social support predicted poorer academic performance.[12,22]

It is possible the interaction effect is linked to the groups utilizing university resources differently. For instance, there is evidence to suggest depressed students may use their supportive relationships, rather than university resources, to cope.[31] The experience of a negative life event may provide an extra impetus to approach staff or other services for help and those students may be offered extensions or extra academic support. Similarly, although just missing statistical significance, when there was no negative life event, depressed students with supportive relationships performed worse academically than those without, again suggesting university resources may not be utilized when there are alternative sources of support available.

This study demonstrates that individual, interpersonal and socio-environmental level factors all interact to influence academic performance assessed prospectively. Potentially, this also reflects the effect of institutional level factors (e.g. institutional support, policies, recognition of mental health problems), although research is needed to explore how universities respond to these different groups of students. Nevertheless, understanding potential differences in how undergraduates respond to the challenges they face is critical to effective service delivery. This study suggests universities would benefit from campaigns which increase use of mental health services; activities that increase student engagement and relationships; services that support students in domains where life events are common and encourage their utilization; and integrate mental health and stress into policies around educational goals and academic achievement.

This study has several strengths including the objective and prospective measure of academic achievement and a personalized life event measure that performs better than checklist approaches.[24] However, the results may lack generalizability because while the sample is relatively large, the majority of the respondents were BAME and females studying psychology. Furthermore, the study was cross-sectional with respect to support, life events and depression and thus the direction of the associations identified cannot be ascertained. Equally, academic achievement is influenced by a number of factors, such as social media use,[32] intelligence and approaches to learning[33], which were not measured due to being outside the scope of the present study.

Nevertheless, the results show that universities need to provide ongoing support to help students with the transition to university life. Depressive symptoms and a lack of supportive relationships were both common. Educators should be aware of the connections between mental health, ongoing stressors and social support to academic performance and student retention. Purposefully supporting student mental health, coping with life events and

social integration is likely to improve student life satisfaction but also have a direct impact on academic achievement and retention.

References

1. Wynaden D, McAllister M, Tohotoa J, Al Omari O, Heslop K, Duggan R, et al. The silence of mental health issues within university environments: A quantitative study. *Arch Psychiatr Nurs.* 2014;28:339-344. doi: 10.1016/j.apnu.2014.08.003. PMID: 25439976.

2. Unite. *Student Resilience: Unite Students Insight Report*. Bristol: Unite Students; 2016.

3. American College Health Association. *American College Health Association-National College Health Assessment II: Undergraduate Student Reference Group Data Report Fall 2019*. Silver Spring, MD: American College Health Association; 2020.

4. Neeves J, Hillman N. *The 2016 Student Academic Experience Survey*. Oxford: Higher Education Policy Institute; 2016.

5. Kessler RC, Amminger GP, Aguilar-Gaxiola S, Alonso J, Lee S, Ustun TB. Age of onset of mental disorders: A review of recent literature. *Curr Opin Psychiatry.* 2007;20(4):359-364. doi: 10.1097/yco.0b013e32816ebc8c. PMID: 17551351.

6. Piccinelli M, Wilkinson G. Gender differences in depression. Critical review. *Br J Psychiatry*. 2000;177:486-492. doi: 10.1192/bjp.177.6.486. PMID: 11102321.

7. Hunt J, Eisenberg D. Mental health problems and help-seeking behavior among college students. *J Adolesc Health.* 2010;46(1):3-10. doi: 10.1016/j.jadohealth.2009.08.008. PMID: 20123251

8. Cook LJ. Striving to help college students with mental health issues. *J Psychosoc Nurs Ment Health Serv.* 2007;45(4):40–44. doi: 10.3928/02793695-20070401-09. PMID: 17477328.

9. Brown GW, Bifulco A, Harris T. (1987). Life events, vulnerability and onset of depression: Some refinements. *Br J Psychiatry.* 1987;150:30-42. doi:10.1192/bjp.150.1.30. PMID: 3651696.

10. Reyes-Rodríguez ML, Rivera-Medina CL, Cámara-Fuentes L, Suárez-Torres A, Bernal G. Depression symptoms and stressful life events among college students in Puerto Rico. *J Affect Disord.* 2013;145:324-330. doi: 10.1016/j.jad.2012.08.010. PMID: 22939390.

11. Hurst CS, Baranik LE, Daniel F. College student stressors: A review of qualitative research. *Stress Health.* 2012;29(4):275-285. doi: 10.1002/smi.2465. PMID: 23023893.

12. Hysenbegasi A, Hass SL, Rowland CR. The impact of depression on the academic productivity of university students. *J Ment Health Policy Econ.* 2005;8(3):145–151. PMID: 16278502.

13. Dwyer A, Murphy M, O'Sullivan D, Di Blasi Z. Perceived social support and neuroticism interact in predicting depression level among depressed university students. *Ir J Psychol.* 2014;35(2-3):69-77. doi: 10.1080/03033910.2014.921229.

14. Martínez-Hernáez A, Carceller-Maicas N, DiGiacomo SM, Ariste S. (2016). Social support and gender differences in coping with depression among emerging adults: a mixed-methods study. *Child Adolesc Psychiatry Ment Health.* 2016;10:2. doi: 10.1186/s13034-015-0088-x. PMID: 26744601.

15. Bifulco A, Thomas G. *Understanding adult attachment in family relationships: Research, assessment and intervention*. London: Routledge; 2012.

16. Keyes CL, Eisenberg D, Perry GS, Dube SR, Kroenke K, Dhingra SS. The relationship of level of positive mental health with current mental disorders in predicting suicidal behavior and academic impairment in college students. *J Am Coll Health.* 2012;60:126–133. doi: 10.1080/07448481.2011.608393. PMID: 22316409.

17. Hojat M, Gonnella JS, Erdmann JB, Vogel WH. Medical students' cognitive appraisal of stressful life events as relaed to personality, physical well-being and academic performance: a longitudinal study. *Pers Individ Dif.* 2003;35(1):219-235. doi: 10.1016/S0191-8869(02)00186-1.

18. Dyrbye LN, Thomas MR, Huntington JL, Lawson KL, Novotny PJ, Sloan JA, Shanafelt TD. Personal life events and medical student burnout: A multicenter study. *Acad Med.* 2006;81(4):374-384. doi: 10.1097/00001888-200604000-00010. PMID: 16565189.

19. Nicpon MF, Huser L, Blanks EH, Sollenberger S, Befort C, Kurpius SE. The relationship of loneliness and social support with college freshmen's academic performance and persistence. *J Coll Stud Ret.* 2006;8(3):345-358. doi: 10.2190/A465-356M-7652-783R.

20. Malecki CK, Demaray MK. Social support as a buffer in the relationship between socioeconomic status and academic performance. *School Psychology Quarterly.* 2006;21(4):375-395. doi: 10.1037/h0084129.

21. Mackinnon SP. Perceived social support and academic achievement: cross-lagged panel and bivariate growth curve analyses. *J Youth Adolesc.* 2012;41(4):474-485. doi: 10.1007/s10964-011-9691-1. PMID: 21720859.

22. Salzer M. (2012). A comparative study of campus experiences of college students with mental illnesses versus a general college student. *J Am Coll Health.* 2012;60(1):1-7. doi: 10.1080/07448481.2011.552537. PMID: 22171723.

23. Andrews B, Wilding JM. The relation of depression and anxiety to life-stress and achievement in students. *Br J Psychol.* 2004;95(4):509-521. doi: 10.1348/0007126042369802. PMID: 15527535.

24. Bifulco A, Spence R, Nunn S, Kagan L, Bailey-Rodriguez D, Hosang G, et al. Web-based measure of life events using Computerized Life Events and Assessment Record (CLEAR): Preliminary cross-sectional study of reliability, validity, and association with depression. *JMIR Ment Health.* 2019;6(1):e10675. doi: 10.2196/10675. PMID: 30622088.

25. Brown GW, Harris TO. *Social Origins of Depression: A study of psychiatric disorder in women.* New York, NY: Tavistock; 1978.

26. Goldberg D, Gater R, Sartorius N, Ustun TB, Piccinelli M, Gureje O, et al. The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychol Med.* 1997;27:191-197. doi: 10.1017/s0033291796004242. PMID: 9122299.

27. Hankins M. The reliability of the twelve-item general health questionnaire (GHQ-12) under realistic assumptions. *BMC Public Health.* 2008;8:355. doi: 10.1186/1471-2458-8-355. PMID: 18854015.

28. Hardy GE, Shapiro DA, Haynes CE, Rick JE. Validation of the General Health Questionnaire-12 using a sample of employees from England's health care services. *Psychol Assess.* 1999;11(2):159-165. doi: 10.1037/1040-3590.11.2.159

29. Aalto A, Elovainio M, Kivimäki M, Uutela A, Pirkola S. The Beck Depression Inventory and General Health Questionnaire as measures of depression in the general population: A validation study using the Composite International Diagnostic Interview as the gold standard. *Psychiatry Res.* 2012;197:163-171. doi: 10.1016/j.psychres.2011.09.008. PMID: 22365275.

30. Pate CM, Maras MA, Whitney SD, Bradshaw CP. Exploring psychosocial mechanisms and interactions: Links between adolescent emotional distress, school connectedness, and educational achievement. *School Ment Health.* 2017;9(1):28-43. doi: 10.1007/s12310-016-9202-3. PMID: 28947921

31. Aselton P. Sources of stress and coping in American college students who have been diagnosed with depression. Journal of child and adolescent psychiatric nursing. 2012;25(3):119-123. doi: 10.1111/j.1744-6171.2012.00341.x. PMID: 22830509

32. Whelan E, Najmul Islam AKM, Brooks S. Applying the SOBC paradigm to explain how social media overload affects academic performance. *Comput Educ.* 2020;143:103692. doi: 10.1016/j.compedu.2019.103692

33. Chamorro-Premuzic T, Furnham A. Personality, intelligence and approaches to learning as predictors of academic performance. *Pers Individ Differ.* 2008;44(7):1596-1603. doi: 10.1016/j.paid.2008.01.003.

Table 1: Main effects and interaction effects of life events, depression and supportive

relationships for academic performance controlling for sex and age

Main effects

Source	Sum of Squares	df	Mean Square	F	p
Severe Life Events	7.78	1	7.78	.53	.47
Depression	64.02	1	64.02	4.37	.04
Supportive relationships	171.12	1	171.12	11.69	.001
Sex	52.71	1	52.71	3.60	.06
Age	33.07	1	33.07	2.26	.13
Error	3980.92	272	14.64		

Interaction effects

Source	Sum of Squares	df	Mean Square	F	p
Severe Life Events	17.97	1	17.97	1.29	.26
Depression	65.15	1	65.15	4.67	.03
Supportive relationships	18.95	1	18.95	1.36	.25
Sex	50.66	1	50.66	3.63	.06
Age	42.08	1	42.08	3.02	.08
Severe Life Events*Depression	7.45	1	7.45	.53	.47
Severe Life Events*Supportive relationships	3.92	1	3.92	.28	.60
Depression*Supportive relationships	46.47	1	46.47	3.33	.07
Severe Life Events*Depression*Supportive relationships	127.45	1	127.45	9.14	.003
Error	3738.01	268	13.95		