



Accommodation environments and student mental health in the UK: The role of relational spaces

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Accommodation environments and student mental health in the UK: The role of relational spaces

Abstract

Background: Despite Universities UK emphasising a ‘whole university approach’ to improve mental health and wellbeing, quantitative research exploring the role of accommodation environments in student mental health is limited.

Aim: To explore the effects of physical and social structures on university student mental health in the UK.

Methods: Using a cross-sectional sample of newly acquainted student residents living in shared accommodation in North West England ($n=904$), this study sought to investigate how accommodation environments influence students’ mental health with a focus on the concept of relational spaces.

Results: Within the milieu of university accommodation, low sense of belonging and feeling uncomfortable were associated with higher levels of depression, anxiety, and loneliness. Poor relationships with fellow residents and not using communal areas were associated with higher levels of depression and loneliness, whilst sharing cooking with others was associated with higher levels of depression and anxiety.

Conclusions: In order for students to flourish in their new homes, accommodation providers must consider relational wellbeing, making places that foster a sense of belonging where students feel sufficiently connected to others. As empowering communities and promoting community cohesion are central to health and wellbeing promotion, greater efforts need to be made to consider relational aspects of space and wellbeing in the design and stewardship of student accommodation.

Key words: Student accommodation, university student mental health, relational spaces, relational wellbeing, sense of belonging

Introduction

Most university students' housing biographies follow a pattern of 'home to halls to rented housing' in the United Kingdom (UK; Rugg, Ford, & Burrows, 2004).

Consistent with this pattern, living in shared halls of residence is the most popular choice of accommodation for university applicants (Unite Students, 2017). This move presents a unique set of stressors such as forming new friendships, managing money, and perhaps living away from home for the first time (Student Minds, 2014). It is common for mental health problems to arise whilst students are acclimatising to their new environment, and according to a UK cohort study, levels of psychological distress increase on entering university (Bewick, Koutsopoulou, Miles, Slaa, & Barkham, 2010). Due to increasing concerns over student mental health, the Universities UK (UUK) 'Step change' initiative emphasises the importance of a 'whole university approach' (UUK, 2017), which recommends that mental health permeate every aspect of the student experience. As student accommodation is where many university students spend most of their time (Piper, 2017), an important aspect of the student experience is the physical environment and living space. Despite UUK emphasising a 'whole university approach', there is limited research exploring the effects of physical and social structures on university student mental health.

One of the most well known studies investigating the influence of the built environment on wellbeing was conducted by Festinger, Schachter, and Back (1950). Festinger and colleagues found that residents living in blocks of flats at a university were more likely to form friendships with each other if they lived physically, as well as functionally, closer to one another. As the buildings were constructed such that some apartments were more likely to be passed by, functional distance refers to the likelihood of one resident meeting another resident as they go along their daily paths.

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3 Festinger and colleagues concluded that because the built environment influences
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5 people's day-to-day movements, it facilitates coincidental meetings between
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7 residents, which can result in the formation of positive interpersonal relationships and
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9 friendships.
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12 The internal design of shared accommodation also has important effects on
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14 interpersonal relationships (e.g., Baum & Davis, 1980; Baum & Valins, 1977; Brown,
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16 Volk, & Spratto, 2019; Easterbrook & Vignoles, 2015; Holton, 2017). For example,
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18 Baum and Davis (1980) found that inserting a wall in the middle of several long
19
20 corridors to split them into shorter corridors had the effect of facilitating the formation
21
22 of friendship groups. When comparing corridor-design dormitories (e.g., dormitories
23
24 where approximately 34 students share common bathroom and lounge facilities) and
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26 suite-design dormitories (e.g., dormitories where approximately four to six students
27
28 share common facilities), Baum and Valins (1977) identified a number of factors that
29
30 contributed to feelings of helplessness among students living in the corridor-design
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32 dormitories such as having to share communal areas such as bathrooms, study rooms
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34 and lounges with large numbers of students, inability to regulate social interaction on
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36 their floor, and failure to withdraw from unwanted interactions. Similarly, Valins and
37
38 Baum (1973) concluded that the interior architecture of the corridor-design
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40 dormitories require residents to interact with too many others insofar as a socially
41
42 overloaded environment results in feelings of stress. Taken together, these findings
43
44 suggest that corridor-design dormitories are associated with poorer outcomes;
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46 however, this evidence comparing different architectural types of dormitories is out-
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48 dated and so does not examine the role of halls of residence in a contemporary higher
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50 education context.
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3 In a longitudinal study, physical design features that encouraged use of
4 communal areas (e.g., the availability of shared communal areas and an absence of
5 ensuite toilets) increased the frequency of coincidental meetings between university
6 students within shared accommodation, which in turn facilitated greater interpersonal
7 bonds and enhanced feelings of wellbeing (Easterbrook & Vignoles, 2015). As
8 physical proximity and face-to-face meetings act as a catalyst for friendship
9 formation, this more nuanced research demonstrates that the physical qualities of the
10 university student accommodation can affect the likelihood of student relationships
11 being built. In line with this, students residing in social corridor residence halls (e.g.,
12 halls characterised by communal spaces for interaction and limited barriers to
13 privacy) reported higher academic outcomes than those residing in isolating
14 apartment-based residence halls (e.g., halls characterised by successive locking doors
15 and minimal communal space; Brown, Volk, & Spratto, 2019). Taken together, these
16 findings suggest that the physical qualities of university student accommodation
17 shape first-year student engagement and experiences. Despite this, space for social
18 connection in new developments is likely to be limited as accommodation providers
19 place less emphasis on communal space provision if it cannot be justified
20 economically in the short term (Equality Challenge Unit, 2008).
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44 Nevertheless, 88% of young people who were planning to move into student
45 accommodation rated sharing a living space with others who they like as more
46 important than the specification of their accommodation (Unite Students, 2017). In
47 line with this, college and sixth-form students rated making friends as more important
48 to settling in than practical concerns such as physical aspects of their private
49 accommodation space (Harris, 2019). Indeed, the importance of developing new
50 friendships during the transition period is well documented (e.g., Buote et al., 2007;
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3 Holton, 2017; Klaiber, Whillans, & Chen, 2018). New friendships play an important
4 role in helping university students adjust to their new environment. In particular, new
5 friendships were found to play a more important role in the adjustment of resident
6 students compared to commuter students (Buote et al., 2007). Buote and colleagues
7 detailed the process through which the relation between quality of new friendships
8 and adjustment occurs. They found that friendship aided students in adjusting to the
9 university environment by providing a sense of belonging and companionship. In
10 research that more fully illustrates the importance of making friends at this critical
11 time, Klaiber, Whillans, and Chen (2018) used a longitudinal design showing that the
12 number of friendships formed during the transition to university predicted students'
13 self-reported health several years later. Amongst the important findings connecting
14 university accommodation to friendship-making is Neale, Piggott, Hansom, and
15 Fagence (2016) study which suggested that being able to form friendships with fellow
16 hall residents may be doubly beneficial as those who feel well integrated in their
17 accommodation are less likely to consider dropping out of university. Yet, a key
18 differentiator for many university students in whether they can form interpersonal
19 relationships within their accommodation environment was the availability of, access
20 to, and quality of communal living areas (Jopling & Valtorta, 2019).
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45 Despite the consistent associations between friendship formation on entering
46 university and health and wellbeing outcomes, there is limited quantitative research
47 exploring the effects of physical and social structures of residential halls on university
48 student mental health. In particular, there is limited research on the measures that
49 accommodation providers and teams could take to provide resident students with
50 living environments that can support wellbeing and potentially reduce symptoms of
51 depression and anxiety. Within the milieu of university accommodation, we aimed to
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3 investigate the mental health of young people, and to explore the effects of physical
4 and social structures on student mental health. We therefore collected data from
5
6 newly acquainted students living in halls of residence to investigate how
7
8 accommodation environments influence students' mental health. The current study
9
10 examined factors specific to the experience of living in student accommodation which
11
12 included overall satisfaction with accommodation, feeling 'comfortable', engagement
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14 in shared cooking activities, utilisation of communal spaces, and number of flatmates,
15
16 as well as social determinants such as students' sense of belonging and perceived
17
18 quality of student relationships in the context of student accommodation. We
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20 expected that (1) not sharing cooking with others, (2) feeling 'uncomfortable', (3) not
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22 using communal spaces, (4) larger flat sizes, (5) accommodation dissatisfaction, (6)
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24 having poor relationships with flatmates, and (7) low sense of belonging would be
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26 associated with higher levels of depression, anxiety and loneliness in this new student
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28 sample.
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38 **Methods**

39 **Ethical approval**

40 Ethical approval was received from the Institute of Population Health Sciences
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42 (IPHS) Research Ethics Committee (IPHS-1516-SMc-192-Bentall-student wellbeing).
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45 All participants have given consent for their data to be used in the research.
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51 **Participants**

52 A cross-sectional online survey was launched in October 2019 across two large
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54 universities in North West England. A total of 1521 first-year resident students began
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56 the survey. Surveys missing more than 25% of responses were considered incomplete,
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3 leaving a final sample of 904 first year university students living in halls of residence.
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5 Six hundred (66.4%) participants were living in university-owned accommodation
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7 and 303 participants (33.5%) were residing in privately owned student
8
9 accommodation. The majority of participants were from white ethnic backgrounds
10
11 (80%). Sixty-six per cent identified as female and 34% identified as male. The
12
13 average age of participants was 19.40 years (SD±2.30).
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19 **Measures**

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21 The measures used in the study comprised a number of single-item questions
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23 pertaining to accommodation alongside standardised self-report measures of mental
24
25 health and interpersonal relations. These measures are detailed below. All participants
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27 provided informed consent after reading the study's online information sheet and by
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29 ticking a consent checkbox before beginning the measures.
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35 *Use of social and communal spaces*

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37 To determine use of the social and communal areas within accommodation
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39 environments, a single item was included: 'Do you use the communal spaces?'
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41 Response options included 1='Yes' or 2='No'.
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47 *Sharing cooking within flats*

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49 To determine whether cooking duties are shared within flats, a single item was
50
51 included: 'Do you share cooking with other people?' Response options included 1=
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53 'Yes' or 2='No'.
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3 *Comfortable living situation*
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5 To ascertain how comfortable university students feel in general in their living space,
6
7 a single item was included: 'How comfortable do you find your living situation?'

8
9 Response options ranged from 1='Very uncomfortable' to 5='Very comfortable'.
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15 *Living group size*
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17 To establish the number of people living together in a flat, the following single item
18
19 was included: 'How many other people (not including yourself) do you live with?'

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21 This refers to your individual dwelling (e.g., your flat or house)'. Response options
22
23 ranged from 0= 'None I live alone' to 10='10 or more'.
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29 *Accommodation satisfaction*
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31 The level of satisfaction with accommodation was measured using a single item:
32
33 'Please rate how satisfied you are with your accommodation'. Response options
34
35 ranged from 1= 'Very unsatisfied' to 5= 'Very satisfied'.
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40 *School Climate and School Identification Measurement Tool – Student (SCASIM-St;*
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42 *Lee et al., 2017)*
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44 The student-student relationships subscale from the SCASIM-St was adapted to
45
46 assess relationships within student accommodation. All seven items are scored on a
47
48 seven-point scale (1=strongly disagree; 7=strongly agree). Examples of items include
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50 'students are friendly to each other' and 'students are accepting of each others'
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52 differences'. The internal consistency of this measure for this study was $\alpha = .93$.
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3 *Sense of belonging*
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5 To ascertain university students' sense of belonging to accommodation, a single item
6 was included: 'How strongly do you feel you belong to your accommodation'.
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8 Response options ranged from 1='Not at all strongly' to 4='Very strongly'.
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15 *Patient Health Questionnaire (PHQ-9; Kroenke & Spitzer, 2002)*
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17 The Patient Health Questionnaire (PHQ-9) is a nine-item scale that assesses frequency
18 of depressive symptoms over the past two weeks. All items are scored on a 4-point
19 scale (0= not at all; 1=symptom occurred on several days; 2=symptom occurred more
20 than half of the days; 3=symptom occurred nearly every day). The internal
21 consistency of this measure for this study was $\alpha = .91$.
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31 *Generalised Anxiety Disorder (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006)*
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33 The Generalised Anxiety Disorder-7 is a seven-item scale that assesses frequency of
34 anxiety symptoms over the past two weeks. All items are scored on a 4-point scale
35 (0= not at all; 1=symptom occurred on several days; 2=symptom occurred more than
36 half of the days; 3=symptom occurred nearly every day). The internal consistency of
37 the GAD-7 for this study was $\alpha = .93$.
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47 *UCLA Loneliness Scale (ULS-8; Hays & DiMatteo, 1987)*
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49 The ULS-8 is an eight-item scale that assesses loneliness. All items are score on a 4-
50 point scale (1=Never; 2=Rarely; 3=Some of the time; 4=Often). The internal
51 consistency for this study was $\alpha = .88$.
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Statistical analyses

Descriptive statistics were computed for all variables. Pearson's correlation coefficients were computed between the main variables of interest to investigate associations. Hierarchical regression analyses were conducted to assess the contributions of key stressors and protective factors within the milieu of university accommodation to explaining common mental health difficulties and loneliness.

Results

As shown in Figure 1, using the published criteria for moderate depression (10-14; Kroenke & Spitzer, 2002) and anxiety (10-14; Spitzer et al., 2006), 21.9% met the criteria for moderate depression, 18.14% met the criteria for moderate anxiety, and 6.75% met the moderate criteria for both. Using the published criteria for moderately severe and severe depression (15-27 PHQ-9) and severe anxiety (15-21 GAD-7), 25.55% met the criteria for moderately severe and severe depression, 18.92% met the criteria for severe anxiety, and 15.27% met the severe criteria for both.

[Insert Figure 1]

Descriptive characteristics of the final sample (n=904) and the inter-correlations between the key variables are shown in Table 1. With regard to social and communal spaces, 762 students (84.3%) make use of these spaces whilst 119 students (13.2%) do not. In relation to sharing cooking with others, 360 students share cooking with others (39.8%) whilst 523 students (57.9%) do not.

[Insert Table 1]

Hierarchical regression analysis: Depression

Hierarchical regression analysis assessed the contributions of aspects of accommodation to explaining depression (see Table 2). In the model, age, sex and

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2
3 accommodation provider status were entered first to account for any effects of these
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5 variables. In the second step, use of communal areas, sharing cooking with others,
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7 feeling comfortable, living group size, accommodation satisfaction, relationships with
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9 flatmates and sense of belonging were entered. The overall regression model
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11 predicted approximately 21% of variance in depression, $R^2 = .21$, $F(10, 811) = 21.93$,
12
13 $p < .001$. Age, sex and accommodation provider status predicted approximately 4% of
14
15 variance in depression although only sex and accommodation provider status were
16
17 significant predictors with higher depressive symptoms in females and those living in
18
19 privately owned accommodation. After controlling for age, sex, and accommodation
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21 provider status, step two predicted approximately 17% of variance in depression,
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23 although only sharing cooking with others, not using communal spaces, feeling
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25 uncomfortable, relationships with flatmates, and sense of belonging significantly
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27 predicted depression.
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33 *[Insert Table 2]*
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35 **Hierarchical regression analysis: Anxiety**

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37 Hierarchical regression analysis assessed the contributions of aspects of
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39 accommodation to explaining anxiety (see Table 3). In the model, age, sex and
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41 accommodation provider status were entered first to account for any effects of these
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43 variables. In the second step, use of communal areas, sharing cooking with others,
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45 feeling comfortable, living group size, accommodation satisfaction, relationships with
46
47 flatmates and sense of belonging were entered. The overall regression model
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49 predicted approximately 20% of variance in anxiety, $R^2 = .20$, $F(10, 811) = 20.13$, p
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51 $< .001$. Age, sex and accommodation provider status predicted approximately 4% of
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53 variance in anxiety although only sex and accommodation provider status were
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55 significant predictors with higher anxiety symptoms in females and those living in
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3 privately owned accommodation. After controlling for age, gender, and
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5 accommodation provider status, step two predicted approximately 16% of variance in
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7 anxiety, although only sharing cooking with others, feeling uncomfortable and low
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9 sense of belonging significantly predicted symptoms of anxiety.
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12 *[Insert Table 3]*
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14 **Hierarchical regression analysis: Loneliness**

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16 Hierarchical regression analysis assessed the contributions of aspects of
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18 accommodation to explaining loneliness (see Table 3). In the model, age, sex and
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20 accommodation provider status were entered first to account for any effects of these
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22 variables. In the second step, use of communal areas, sharing cooking with others,
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24 feeling comfortable, living group size, accommodation satisfaction, relationships with
25
26 flatmates and sense of belonging were entered. The overall regression model
27
28 predicted approximately 39% of variance in loneliness, $R^2 = .39$, $F(10, 811) = 50.95$,
29
30 $p < .001$. Age, sex and accommodation provider status predicted less than 1% of
31
32 variance in loneliness. After controlling for age, sex, and accommodation provider
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34 status, step two predicted approximately 38% of variance in loneliness, although only
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36 not using communal spaces, feeling uncomfortable, poor relationships with flatmates
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38 and low sense of belonging significantly predicted loneliness.
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47 **Discussion**

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49 Within the milieu of university accommodation, we aimed to investigate the mental
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51 health of young people, and to explore the effects of physical and social structures on
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53 student mental health. Overall, there were high levels of depressive symptoms and
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55 anxiety. In particular, more than a quarter of first-year university students (26%)
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3 scored above the cut-off for moderately severe levels of depression, whilst nearly a
4
5 quarter (19%) were above the cut-off for severe anxiety.
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8 Contrary to our first hypothesis, participants who reported sharing cooking
9
10 with others experienced increased symptoms of depression and anxiety. One
11
12 explanation for this association is that pressure associated with preparing and cooking
13
14 meals for fellow residents may be keenly felt during the transition period, especially
15
16 for those who arrive at university without well-developed independent life skills.
17
18 Similarly, fear of being judged may also lead certain individuals to feel anxious whilst
19
20 preparing and cooking meals for themselves in communal areas or for flatmates.
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22 Thus, a number of difficulties may arise from the engagement in sharing cooking
23
24 activities; however, due to the use of a single-item variable, our interpretations of this
25
26 association should be treated with caution.
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30 In line with our second hypothesis, university students who reported feeling
31
32 more generally uncomfortable within their living space experienced higher levels of
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34 depression, anxiety, and loneliness. In partial support of our third hypothesis,
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36 university students who reported not using social and communal spaces experienced
37
38 higher levels of depression and loneliness. As social and communal areas provide a
39
40 shared space where university students can spend time interacting with fellow
41
42 residents, social ties may become stronger between those who utilise these spaces.
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44 University students may also meet new people whilst interacting within these spaces,
45
46 presenting a unique opportunity to cultivate a wider friendship network. This supports
47
48 previous research demonstrating the importance of students residing in halls that
49
50 provide communal spaces for interaction (e.g., Brown et al., 2019), whilst also
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52 highlighting the value of such spaces to student mental health. These findings are
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54 particularly important when considering that the inclusion of spaces for social
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3 interactions within new developments are likely to be sacrificed within short-term
4 economically weighted models (Equality Challenge Unit, 2008). Due to the cross-
5 sectional nature of the data, it is equally plausible that people do not interact within
6 these spaces because they are experiencing symptoms of depression.
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12 Against predictions, however, findings indicated that larger living group sizes
13 were not associated with higher levels of depression, anxiety and loneliness. This is in
14 contrast to previous research demonstrating how friendship groups formed more
15 readily within shorter corridors (e.g., Baum & Davis, 1980). One explanation for
16 these conflicting findings may be that a 'one size fits all' approach may not be
17 appropriate. For example, certain group sizes may be regarded as too large to support
18 flourishing for some individuals who are shy or naturally introverted, whereas
19 extroverts might prefer living alongside a larger number of people.
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30 Findings also revealed that accommodation dissatisfaction was not associated
31 with loneliness or symptoms of depression or anxiety. Although dissatisfaction with
32 accommodation was not associated with higher levels of depression, anxiety or
33 loneliness, this finding is consistent with previous research illustrating that university
34 applicants rate sharing a living space with others who they like as more important
35 than the specification of their accommodation (e.g., Unite Students, 2017).
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44 In partial support of our sixth hypothesis, participants who reported poor
45 relationships with fellow residents experienced higher levels of depression and
46 loneliness. Within the setting of university accommodation, strong social connections
47 with other students may provide residents with fortification against depressive
48 symptoms as new friends can offer sources of enjoyment, provide both instrumental
49 and emotional support, and may help to alleviate feelings of loneliness whilst students
50 acclimatise to a new environment. This supports previous research demonstrating the
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3 importance of friendships during the transition (e.g., Buote et al., 2007; Klaiber et al.,
4
5 2018), whilst also highlighting the health benefits of social integration within
6
7 university accommodation. In line with this, findings also revealed that participants
8
9 who reported low sense of belonging experienced higher levels of depression, anxiety,
10
11 and loneliness. Feeling as though one belongs to one or more groups is a fundamental
12
13 human need (Baumeister & Leary, 1995) and living in shared accommodation offers
14
15 opportunities to derive belonging to a community of place. Consistent with the social
16
17 identity approach to health and wellbeing, social groups, and the social relationships
18
19 they involve, are beneficial for health. In line with this theorising and previous research
20
21 (McIntyre, Worsley, Corcoran, Harrison-Woods, & Bentall, 2018), strong social groups formed within
22
23 shared accommodation may support wellbeing and increase sense of belonging.
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29 To better manage the transition from home into university, accommodation
30
31 teams could engage university students by involving them, as a group, in the process
32
33 of making decisions about the decoration of communal spaces within their
34
35 accommodation. More specifically, university students could be empowered to work
36
37 co-operatively to choose the plants, pictures, and layout for the lounge and dining
38
39 areas of their new living space. Consistent with social identity theorising, collective
40
41 decision-making will increase social identification with other university students in
42
43 their new home and improve their wellbeing. Indeed, the social identity approach
44
45 asserts that a shared sense of identification with others provides a basis for
46
47 meaningful engagement through which health and wellbeing can be enhanced (e.g.,
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49 Haslam, Jetten, Postmes, & Haslam, 2009; Jetten, Haslam, & Haslam, 2012).
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52 Therefore, the use of social and communal areas within student accommodation
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54 should be encouraged. These areas should be conceptualised as having a relational
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56 function with flexibility of space designed into them in order to cater for a diverse
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3 range of needs to provide diverse opportunities for university students to socialise
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5 with fellow residents. As areas in student accommodation are entirely spaces that
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7 contain rather than spaces that encourage meaningful relational activity, every student
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9 hall should include a collaboratory practice to encourage student innovation and
10
11 creativity. Further to this, student accommodation could be a venue for community
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13 building interventions that support social cohesion as joining new groups will enable
14
15 university students to develop a new social identity that they come to share with
16
17 fellow residents. One example of a non-clinical intervention that aligns with
18
19 universities' educational mission is the practice of shared reading. It has been shown
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21 that being a member of a shared reading group has potential to increase sense of
22
23 belonging (Longden et al., 2015).
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30 In light of our findings, accommodation teams should invest time in
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32 organising incoming first-year university students. For example, Plymouth University
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34 operates a system whereby students complete a personality survey to determine their
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36 living preferences (e.g., the types of people they like to socialise with, times of the
37
38 day they enjoy socialising, and the types of activities they enjoy). Although
39
40 potentially time-consuming, gathering such pre-occupancy data to explore where each
41
42 applicant might flourish should take place. Furthermore, to determine whether the
43
44 process of allocation has worked, a post-occupancy evaluation should be conducted.
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47
48 There are, however, several limitations of this study that require consideration
49
50 when interpreting the findings. As our sample comprised students attending
51
52 universities in North West England, generalizability is limited. As participants were
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54 all self-selected volunteers responding to a mass email, it is possible they represent a
55
56 specific subset of the population. Examining a wide range of social determinants and
57
58 factors specific to the experience of living in student accommodation meant striking a
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3 balance between including multiple determinants and factors and examining those
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5 determinants and factors in detail. Thus, although the single-item questions provided
6
7 valuable information, it was at the expense of detail and our interpretations should be
8
9 treated with caution. Last, our data were cross-sectional which limits inferences about
10
11 directionality. For example, the link between poor relationships with fellow residents
12
13 and mental health difficulties may be bidirectional insofar as poor relationships with
14
15 fellow residents may lead to poor mental health and poor mental health may make it
16
17 more difficult to socialise with other people or join social groups. Longitudinal and
18
19 prospective research in this area is therefore needed. Future longitudinal research
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21 could explore change in common mental health difficulties between those living in
22
23 shared accommodation and those living elsewhere (e.g., at home or in privately rented
24
25 accommodation) over the course of one academic year, and how friendship
26
27 development, group membership, and students' sense of belonging to university are
28
29 related to this. In addition to this, the evidence base would benefit from research that
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31 investigates moderators of the associations reported here using a longitudinal study
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33 design. For example, the association between student-student relationships and
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35 symptoms of depression and anxiety may be moderated by perceived social support.
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42 Within the milieu of university accommodation, our work provides a
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44 comprehensive overview of the types of conditions most likely to impact student
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46 mental health. We also suggest ways in which accommodation teams can provide
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48 resident students with living environments that can support wellbeing and potentially
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50 reduce symptoms of depression and anxiety. In order for university students to
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52 flourish, accommodation environments need to become places of belonging, which
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54 incorporate relational spaces designed with diverse interactions in mind so that a
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3 range of group activities can be accommodated and supported. These should be
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5 empowering environments where cohesive student communities can grow and thrive.
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For Peer Review Only

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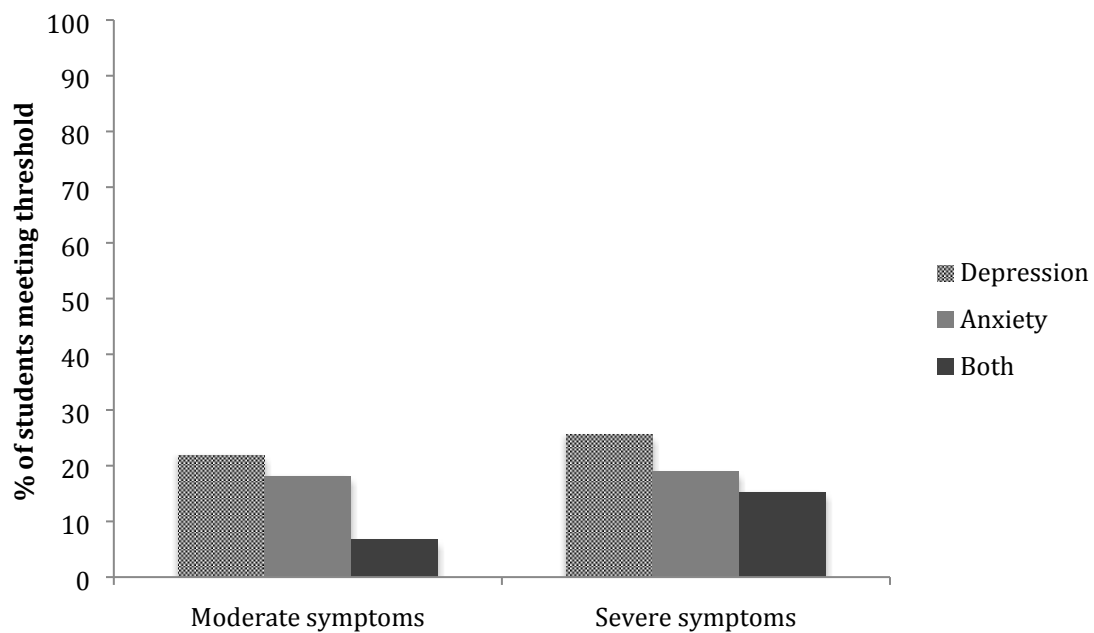


Figure 1. Proportion of students in the sample meeting the criteria for moderate and severe mental health problems

	Mean (\pm SD)	2	3	4	5	6	7	8
1. Feeling comfortable	3.95 (\pm 0.86)	.03	.43**	.49**	.63**	-.36**	-.38**	-.48**
2. Number of people in flat	5.13 (\pm 1.83)	-	.08*	.06	.01	-.03	-.02	-.023
3. Accommodation satisfaction	3.95 (\pm 0.85)		-	.33**	.36**	-.16**	-.16**	-.26**
4. Relationships with flatmates	38.63 (\pm 6.96)			-	.56**	-.29**	-.26**	-.42**
5. Sense of belonging	2.77 (\pm 0.86)				-	-.32**	-.33**	-.58**
6. Depression	10.35 (\pm 6.99)					-	.82**	.60**
7. Anxiety	8.28 (\pm 6.11)						-	.60**
8. Loneliness	18.91 (\pm 5.55)							-

**p<.01; *p<.05

Table 1. Descriptive statistics and Pearson's correlations between the key variables

	Cumulative		Simultaneous	
	R^2 -Change	F(Change)	β	p
Step 1				
Sex	.04	F(3, 818) = 12.53*	.10	.001
Age			-.00	.962
Accommodation provider status			.13	<.001
Step 2				
Use of communal areas	.17	F(7, 811) = 24.87*	.07	.026
Sharing cooking			-.12	<.001
Feeling comfortable			-.23	<.001
Number of people in flat			.03	.291
Accommodation satisfaction			.03	.370
Relationships with flatmates			-.13	.001
Sense of belonging			-.15	.001

* $p < .001$

Table 2. Regression analyses showing age, sex, accommodation provider status, use of communal areas, sharing cooking with others, feeling comfortable, living group size, accommodation satisfaction, relationships with flatmates, and sense of belonging as predictors of depression

	Cumulative		Simultaneous	
	R^2 -Change	F(Change)	β	p
Step 1				
Sex	.04	F(3, 818) = 11.25*	.11	.001
Age			.01	.665
Accommodation provider status			.12	<.001
Step 2				
Use of communal areas	.16	F(7, 811) = 23.02*	.04	.215
Sharing cooking			-.10	.002
Feeling comfortable			-.26	<.001
Number of people in flat			.02	.453
Accommodation satisfaction			.03	.450
Relationships with flatmates			-.07	.082
Sense of belonging			-.15	.001

* $p < .001$

Table 3. Regression analyses showing age, sex, accommodation provider status, use of communal areas, sharing cooking with others, feeling comfortable, living group size, bumping into flatmates, accommodation satisfaction, relationships with flatmates, and sense of belonging as predictors of anxiety

	Cumulative		Simultaneous	
	R^2 -Change	F(Change)	β	p
Step 1				
Sex	.01	F(3, 818) = 1.52	-.01	.853
Age			.00	.876
Accommodation provider status			-.02	.587
Step 2				
Use of communal areas	.38	F(7, 811) = 71.74*	.07	.028
Sharing cooking			.06	.063
Feeling comfortable			-.17	<.001
Number of people in flat			-.00	.884
Accommodation satisfaction			-.01	.824
Relationships with flatmates			-.11	.003
Sense of belonging			-.39	<.001

* $p < .001$

Table 4. Regression analyses showing age, sex, accommodation provider, use of communal areas, sharing cooking with others, feeling comfortable, living group size, accommodation satisfaction, relationships with flatmates, and sense of belonging as predictors of loneliness