

Students' sense of belonging and their socio-economic status in higher education: a quantitative approach

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This study aims to explore the main aspects of sense of belonging, including academic and social engagement, life satisfaction, thoughts of leaving university, demographic characteristics and socio-economic status by applying quantitative measurement. Having considered the concepts of disadvantaged or non-traditional groups deployed in previous studies, a survey questionnaire was designed to investigate how certain factors are related to students' belonging. Statistical analysis of data from 380 participants reveals that students' sense of belonging and retention are crucially influenced by both academic engagement and social engagement, but independently. This study also addresses a lack of research about how the critical factors for disadvantage operate to determine belonging and retention in higher education. The findings should prompt a re-evaluation what we consider to be the sources of 'disadvantage', such as social class, age and ethnicity.

Keywords: sense of belonging; engagement; higher education; questionnaire; disadvantage; retention

Introduction

Students' sense of belonging to their institutions has come to be recognised as one of the most significant factors in students' success and retention in higher education (Brooman and Darwent 2014; Hausmann et al. 2007; Kane et al. 2014; Thomas 2012).

In this context, sense of belonging is defined as personal feelings of connectedness to the institution and it occurs mainly in the academic and social spheres (Thomas 2012).

There has been substantial research to explore belonging and related concepts such as engagement, integration, student experiences in teaching and learning, satisfaction, and retention, and empirical approaches to the measurement of students'

belonging in higher education include qualitative and quantitative research (Kane et al. 2014). For instance, a recent systematic literature review of qualitative studies about student engagement in higher education reports on a large number of articles (2,530) published since 2000 (Wimpenny and Savin-Baden 2013, 314). In contrast, quantitative studies, especially on a large scale, are less numerous (Brooman and Darwent 2014). Furthermore, there is a lack of clear agreement on how to capture students' sense of belonging in higher education using quantitative measurement (Slaten et al. 2018, 634; Yorke 2016, 155). Although a wide range of student surveys is used worldwide, the main focus of surveys tends to remain on students' experience, rather than deliberately measuring belonging (Kane et al. 2014, 194). Direct assessment of sense of belonging as an independent variable is rarely found in higher education research (Hausmann et al. 2007). Belonging, in the higher education context, should be regarded and measured separately from student engagement in the academic and social spheres, since they are conceptually different (Ahn and Davis 2019; Hurtado and Carter 1997).

Empirical research using survey questionnaires in British higher education has often focused on topics such as retention (e.g. Christie et al. 2004; Goldfinch and Hughes 2007; Webb and Cotton 2018; Yorke 2000) and the transition to higher education (e.g. Brooman and Darwent 2014; Goldfinch and Hughes 2007; Kane et al. 2014; McCune et al. 2010; Vinson et al. 2010), rather than belonging. Terminology in retention includes non-completion (Yorke 2000), non-continuation (Christie et al. 2004) and early withdrawal (Goldfinch and Hughes 2007; Webb and Cotton 2018). Measures of belonging in questionnaire are variously itemised as 'university environment' (Christie et al. 2004, 622), 'alienating environment' (Christie et al. 2004, 625), and 'unhappiness with the (university) environment' (Yorke 2000, 67). Although some research mentions belonging, it is often not used as a questionnaire item (e.g. Webb and

Cotton 2018, 12). Other research on first-year students' transition to the university regards belonging as a relevant aspect of social engagement, instead of measuring it independently; belonging is measured as a sub-item of social integration (e.g. Brooman and Darwent 2014), or within a limited boundary such as a learning group (e.g. Vinson et al. 2010, 135).

Furthermore, there is a noticeable gap in research on non-traditional students' sense of belonging to their higher education institution in the UK, where the disadvantaged group is distinguishable in terms of age, class, and ethnicity from the traditional 'elites' such as 'young, white, middle-class and male' (Read et al. 2003, 274). There is strong evidence in the literature that maturity (e.g. Christie et al. 2005; McCune et al. 2010; Reay et al. 2002; Webb and Cotton 2018), socio-economic status (e.g. Reay et al. 2002; Rubin and Wright 2017) and ethnicity (e.g. Pittman and Richmond 2007; Hurtado and Carter 1997; Strayhorn 2010) affect students' sense of belonging to a great extent. Drawing on the work of Reay et al. (2001), Thomas (2002) applied the concept of institutional habitus in higher education, theoretically rooted in Bourdieu's (1977) concepts of cultural capital, field and habitus, in order to examine the impact of social class in terms of students' selection of institutions, their belonging, academic and social experiences, success and retention.

The literature review highlights a lack of research to identify the most appropriate measurement instrument for students' sense of belonging in higher education in the UK, one that would measure belonging independently, and recognise the multidimensionality of belonging, including academic and social engagement, satisfaction, and retention. Demographic indicators such as socio-economic status, ethnicity, maturity, and living conditions are also essential for understanding student

backgrounds in the higher education context. The research questions of this study were formulated, in the light of these issues in the literature.

This study, therefore, seeks to address questions about students' sense of belonging and related concepts such as academic and social engagement, retention and well-being using a quantitative approach. It also aims to capture how these crucial elements affect students differently by investigating underrepresented student groups, particularly those with disadvantaged backgrounds in terms of social class, maturity, and ethnicity.

Methods

Instrument

The Students' Sense of Belonging to Bangor University research (Bangor research) in 2014 aimed to achieve a comprehensive understanding of students' sense of belonging to the institution (Ahn, 2017). Mixed methods research was conducted, but this paper reports only on findings from a student survey using a quantitative approach.

The Bangor research was developed as a response to the What Works? Student Retention & Success programme 2008-2011 (What Works programme), which was co-funded by The Paul Hamlyn Foundation (PHF) and the Higher Education Council for England (HEFCE). The objectives of the What Works programme included enhancing students' retention and well-being by understanding sense of belonging and its related subjects in 22 higher education institutions (Thomas 2012) (see more in Masika and Jones 2016; Yorke 2016). The Bangor research was influenced conceptually and methodologically by the What Works programme; for instance, academic engagement is interpreted as 'effective and/ or deep learning' (Thomas 2012; Ramsden 2003:97), of

which the crucial factors are suggested as relationships with academic and administrative staff, interaction with fellow students and support, learning experiences, and curricular and assessment. It also argues that social engagement occurs in the various social spaces within the institution, including living accommodations, via social interaction and activities (Thomas 2012).

The Bangor research intended to examine whether the findings from the previous research were applicable to Bangor University, by designing a survey questionnaire with relevant items. The survey consisted of 33 questions on a five or seven point Likert scale, designed to collect data on several aspects of belonging: academic and social engagement, life satisfaction, thoughts of leaving university, and demographic information. Firstly, sense of belonging to the university (University belonging) and to the student's own academic department (School belonging) were both measured to check for differences between them, considering the institutional boundaries. Next, academic engagement was itemised as students' expectations and experiences of academic activities; questions for academic engagement were developed to examine how strongly academic factors are related to sense of belonging as well. Social engagement was examined in relation to social networks and interaction, and participation in university clubs and societies; questions included 20 sub-items such as socialising (visit the pub, nightclubs, friends' homes and halls), leisure activities (use SNS, visit the gym, play a sport, play games, watch TV, read, hobbies), and various voluntary organisations (student union, university clubs and societies, general volunteering, etc.). The frequency of social participation and number of close friends were used to measure the size and strength of respondents' social networks.

The survey includes key questions asking whether a participant has considered leaving university; and how strongly they are satisfied with their life. It also collects

demographic information, including age, gender, ethnicity, nationality, student national status, and disability. Other indicators are applied to measure socio-economic status such as the level of study, student status, types of accommodation, distance to the university, cohabitants, academic schools and whether the participant is a means-tested university bursary recipient.

Data collection

The data was collected from 380 participants in 16 academic departments between the 17th March and 2nd May 2014. Purposive maximum-variation sampling was used to ensure that four target groups were included in the larger sample: mature students, students in receipt of a means-tested bursary, international students, and Welsh medium students. In order to overcome the problem of low response rates, participants were recruited within their scheduled lectures. The recruiting procedure was to identify modules which contained as many targeted students as possible; and to visit a suitable lecture in those modules to conduct the survey. At the recruitment stage, the ethical conditions for the research were clearly explained to participants. Taking part in the survey was completely voluntary and on the understanding that the data would be held in strict confidence. Ethical approval was granted by the College Ethics Committee.

Participants

Female students (n= 242, 63.7%) outnumbered male students (n= 130, 34.2%), and the age range of both was between 18 and 53. While the age range of the majority of participants (n= 280, 75%) was between 18 and 22, the rest were scattered evenly. The School of Social Sciences had the highest number of participants (n=76, 20.0%),

followed by Psychology (n= 58, 15.3%), Healthcare Sciences (n= 44, 11.6%), and Biological Sciences (n= 30, 7.9%). The UK students were the majority (n=317, 83.4%), followed by international students (n=33, 8.7%), and EU students (n=13, 3.4%). Many participants considered themselves as either English (n=163, 42.9%) or Welsh (n=138, 36.3%), while the majority (n= 294, 77.4%) declared their ethnicity to be White. Most participants responded No Disabled (n=308, 81.1%). The full demographic information is presented in Table 1.

Table 1 Profile of participants in the survey

Variable	n = 380 (%)
Gender	
Female	242 (63.7%)
Male	130 (34.2%)
Age	
	Range : 18 – 53
	IQR: 20, 21, 22
Female	M=23.1 SD= 6.887
Male	M=23.4 SD= 5.939
Academic Discipline	
School of Social Sciences	76 (20.0%)
School of Psychology	58 (15.3%)
School of Healthcare Sciences	44 (11.6%)
School of Biological Sciences	30 (7.9%)
School of Education	23 (6.1%)
School of English	19 (5.0%)
Joint degree	19 (5.0%)
School of Computer Sciences	18 (4.7%)
School of Electronic Engineering	14 (3.7%)
School of Creative Studies and Media	14 (3.7%)
School of Ocean Sciences	13 (3.4%)
Others	45 (11.8%)
Ethnic Identity	
White	294 (77.4%)
Other White background	21 (5.5%)
Other ethnic background	43 (11.3%)
National Identity	
English	163 (44.2%)
Welsh	138 (37.4%)
Others	68 (18.4%)
Student Status	
UK	317 (87.3%)

EU	13 (3.6%)
International	33 (9.1%)
Disability	358 (94.2%)
No	308 (81.1%)
Yes	31 (8.2%)
Not wish to declare	19 (5.0%)
Accommodation	369 (97.1%)
Private residence	212 (57.5%)
Own home	81 (22.0%)
University halls of residence	71 (19.2%)
Co-habitant	365 (96.1%)
Alone or friends	233 (63.9%)
Parents or guardians	45 (12.3%)
Partner or children	36 (9.8%)
Distance to University	364 (95.8%)
In Bangor	249 (68.4%)
Further than 10 miles of Bangor	82 (22.5)
Within 10 miles of Bangor	33 (9.1%)
University Bursary	367 (96.6%)
Yes	192 (52.3%)
No	163 (44.4%)
Not with to declare	12 (3.3%)

(Due to missing data, the sum might not be always 100%)

The table also shows that about half of participants were receiving a Bangor Bursary (n=192, 50.5%), whereas slightly fewer (n=163, 42.9%) did not. This figure compares closely with the official registry figure of students who received a bursary (48.0%). Many students were living in Bangor (n=249, 65.5%), while some students travelled from further than 10 miles away (n=82, 21.6%), within 10 miles (n=20, 5.3%), or within 5 miles (n=13, 3.4%). Around half of the participants were staying in privately rented/shared houses (n=197, 51.8%), whereas only 71 participants were living in university halls (18.7%). Around half of the participants were living with friends from university (n=205, 53.9%), and 11.8% (n=45) were still living with their parents or guardians. A small number of participants (n=7, 1.8%) were living with school-age children.

Results

Sense of belonging, academic and social engagement, and retention

A principal component analysis (PCA) was conducted on the 25 items with oblique rotation (direct oblimin). The initial correlation analysis resulted in eliminating certain variables and selecting the most relevant 25 items. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis (KMO= 0.85), and all KMO values for individual items were greater than 0.62, which is more than acceptable. Having considered the eigenvalues, which should be over Kaiser's criterion of 1, six factors were extracted, which in combination explained 59.05% of the variance. The table below shows the factor loadings after rotation.

Table 2 The summary of the principal component analysis results PCA (N=333)

	Retention & wellbeing	Socialising	Interacting with PT	Volunteering & Uni clubs	Academic engagement	Belonging & support	Commu- nalties
Leaving university	.74						.55
Life satisfaction as a student	.63						.68
Life satisfaction	.63						.53
Trust people	.59						.69
Visiting pubs		.80					.72
Visiting nightclubs		.76					.68
Socialising with friends		.72					.58
Visiting friends'		.70					.51
Facebook/SNS		.57					.35
Number of close friends		.49					.43
Enjoyable social life as a student	.44	.49					.69
Talking to PT			.80				.69
Discussing with PT			.79				.63
Students Union				.73			.58
Volunteering				.64			.43
University clubs & societies				.58			.60
Assessment expectation					.76		.66
Course expectation					.68		.63
Degree for future goals					.59		.58
Talking to lecturer			.33		.35	-.33	.53
School belonging						-.76	.72

University belonging						-.71	.66
Talking to fellow students						-.69	.66
Supportive fellow students						-.56	.61
Working with other students						-.40	.48
Eigenvalues	6.55	3.09	1.59	1.28	1.18	1.08	
% of variance	26.18	12.35	6.36	5.11	4.72	4.34	
α	.71	.81	.69	.56	.75	.73	

The items that cluster on the same factor suggest that factor 1 represents Retention and wellbeing; factor 2 Socialising; factor 3 Interacting with personal tutors (PT); factor 4 Volunteering and University clubs; factor 5 Academic engagement; and factor 6 Belonging and support. All six factors had moderate reliabilities (Cronbach's α between 0.56 and 0.81). Retention and wellbeing (factor 1) consists of the thought of leaving university, life satisfaction (in general as well as a student) and trustworthiness towards others in general. Socialising (factor 2) reflects how often participants have social gatherings such as visiting pubs and nightclubs, or go out with friends, face-to-face as well as using Social Networking Services, and how satisfied they are with their social life as a student. General volunteering and participating in university clubs and societies including the student union represents factor 4 (Volunteering and university clubs). On the academic side, factor 3 is Interacting with personal tutors and factor 5 relates to Academic engagement. Lastly, Belonging and support (factor 6) includes how strongly participants feel sense of belonging to their academic school and university, as well as support from fellow students, and how likely they are to interact with them.

The next stage was to conduct correlation analysis between the six factors to explore how they are related. The results in Table 3 reveal that Retention and wellbeing (factor 1) is significantly associated with Belonging and support (factor 6); the correlation coefficient is the highest amongst six factors ($r=-0.365$, $p>0.01$). In addition,

Belonging and support is correlated with four other factors, except for Volunteering and university clubs, whereas Retention and wellbeing is associated with all five factors.

Table 3 Correlation analysis results between six factors

	Socialising	Interacting with PT	Volunteering & Uni clubs	Academic engagement	Belonging & support
Retention & wellbeing	.238**	.111*	.110*	.202**	-.365**
Socialising			.157**		-.242**
Interacting with PT				.145**	-.241**
Volunteering & Uni clubs					
Academic engagement					-.224**

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Socialising (factor 2) and academic engagement (factor 3 and 5) are separately correlated with both Retention and wellbeing (factor 1) and Belonging and support (factor 6). Interestingly, however, there is no correlation between the factors related to academic engagement (factor 3 and 5) and social engagement (factor 2 and 4).

Demographic characteristics and socio-economic status

Further statistical analysis of six factors was conducted to examine possible differences between participants groups. Participants were categorised into two groups based on their age (i.e. young and mature groups), and the independent-samples t-test was performed (sample sizes over 30 were needed to run the test effectively).

There is no difference in Retention and wellbeing (factor 1), and Belonging and support (factor 6), in terms of age (young and mature, $t(317.67)=0.57$, $p=0.56$ for factor 1; $t(326.74)=-0.17$, $p=0.87$ for factor 6), gender (female and male, $t(243.17)=-0.15$, $p=0.87$ for factor 1; $t(200.23)=-0.88$, $p=0.38$ for factor 6) and disability (disabled and not disabled, $t(31.27)=-0.12$, $p=0.90$ for factor 1; $t(33.97)=2.23$, $p=0.06$ for factor 6). In

addition, gender is the only indicator which shows a significant difference in academic engagement ($t(200.96) = 2.53, p < 0.05$).

Ethnicity was investigated using three indicators: ethnic identity (White and the rest), national identity (Welsh and English) and student status in UK higher education (UK Home student and the rest). The statistical tests revealed that depending on national identity, both Retention and wellbeing (factor 1, $t(257.08) = -2.92, p < 0.01$) and Belonging and support (factor 6, $t(253.27) = 3.71, p < 0.01$) show significant differences, while only the difference in Belonging and support (factor 6, $t(44.40) = -2.27, p < 0.05$) was found in the student status indicator. Depending on student status as well as ethnic identity, there are significant differences found in Socialising (factor 2). Table 4 shows that participants who identify as Welsh have a higher propensity to think about leaving university ($M = 2.40, SD = 1.458$) and lower level of belonging to university ($M = 3.78, SD = 1.009$) as well as academic schools ($M = 3.86, SD = 0.983$) than English participants (Leaving university $M = 2.28, SD = 1.353$; School belonging $M = 4.27, SD = 0.943$; University belonging $M = 4.28, SD = 0.852$).

In terms of co-habitants, distances and accommodation types, results of the independent samples t-test reveal that significant differences were found in Retention and wellbeing (factor 1); particularly between 'Alone or with friends' or 'Parents or guardians' ($t(46.95) = 2.61, p < 0.05$); secondly, between 'Living in Bangor' or 'Further than 10 miles from Bangor' ($t(124.34) = 2.60, p < 0.05$); and lastly, between 'Living in private residences' and 'In own home' ($t(127.47) = 2.51, p < 0.05$). According to Table 4 the participants living with parents or guardians ($M = 2.60, SD = 1.483$), in their own home ($M = 2.42, SD = 1.448$), further than 10 miles away ($M = 2.46, SD = 1.442$) are more likely to consider leaving the university than those living alone or with friends ($M = 2.27, SD = 1.370$), living in university halls ($M = 2.15, SD = 1.203$) or closely to the university

(M=2.31, SD=1.399). They also seem to feel less belonging to the university with noticeable gaps (0.23-0.45). A significant difference in Belonging and support (factor 6) was also found between participants receiving the school bursary and not ($t(299.67)=2.07$ $p<0.05$).

Table 4 Descriptive analysis of belonging, retention and satisfaction variables with means (M) and standard deviation (SD) by demographic and socio-economic indicators

M (SD)	Leaving University	Life satisfaction as a student	School belonging	University belonging
Total participants	2.37 (1.427)	3.97 (0.890)	4.03 (0.951)	3.96 (1.020)
Gender				
Female	2.33 (1.425)	4.00 (0.920)	4.04 (0.934)	3.90 (1.012)
Male	2.45 (1.436)	3.91 (0.849)	4.01 (0.996)	4.12 (0.989)
Disability				
Yes	2.68 (1.469)	3.94 (0.964)	4.32 (0.832)	4.29 (0.864)
No	2.30 (1.394)	4.01 (0.880)	4.03 (0.968)	3.96 (1.038)
Age				
Young	2.35 (1.388)	4.04 (0.886)	4.03 (0.942)	4.06 (0.970)
Mature	2.38 (1.490)	3.84 (0.900)	4.03 (0.986)	3.82 (1.073)
National identity				
Welsh	2.40 (1.458)	3.90 (0.930)	3.86 (0.983)	3.78 (1.009)
English	2.28 (1.353)	4.11 (0.861)	4.28 (0.852)	4.27 (0.943)
Student status				
UK	2.34 (1.402)	4.02 (0.880)	4.06 (0.939)	4.02 (0.993)
Not UK	2.35 (1.479)	3.76 (0.923)	3.91 (1.083)	3.76 (1.151)
Bursary				
Recipient	2.40 (1.410)	3.94 (0.911)	3.97 (0.994)	3.82 (1.075)
Non-recipient	2.21 (1.372)	4.04 (0.863)	4.14 (0.914)	4.19 (0.914)
Accommodation				
Private residence	2.36 (1.448)	4.05 (0.912)	4.14 (0.948)	4.13 (1.001)
University halls	2.15 (1.203)	4.10 (0.679)	3.99 (0.925)	3.90 (0.943)
Own home	2.42 (1.448)	3.70 (0.940)	3.83 (0.985)	3.67 (1.061)
Co-habitant				
Alone or friends	2.27 (1.370)	4.10 (0.822)	4.11 (0.936)	4.11 (0.983)
Partner or children	2.42 (1.538)	3.83 (0.910)	4.14 (0.833)	3.86 (0.974)
Parents or guardians	2.60 (1.483)	3.64 (1.069)	3.69 (0.973)	3.69 (1.164)
Distance to University				
In Bangor	2.31 (1.399)	4.08 (0.851)	4.08 (0.964)	4.10 (0.973)
Within 10 miles	2.27 (1.485)	3.91 (0.980)	4.09 (0.893)	3.91 (1.058)
Further than 10 miles	2.46 (1.442)	3.74 (0.900)	3.91 (0.932)	3.65 (1.063)
Academic school				
Healthcare	2.57 (1.500)	3.52 (0.876)	4.09 (0.741)	3.14 (0.878)
Social Sciences	2.41 (1.308)	3.83 (0.915)	3.74 (1.038)	3.91 (1.048)

Psychology	2.40 (1.555)	4.36 (0.693)	4.28 (1.039)	4.41 (0.974)
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(Items were measured on the 5 points scale: 1 'Strongly disagree' to 5 'Strongly agree')

All socio-economic indicators show statistical differences in Socialising (factor 2, Receiving a bursary $t(307.98)=-2.66$, $p<0.01$; Living with parents $t(38.39)=4.76$, $p<0.01$; Living further than 10 miles from Bangor $t(107.17)=5.05$, $p<0.01$; Living at own home $t(120.01)=9.10$, $p<0.01$) and Volunteering and university clubs (factor 4, Receiving a bursary $t(297.25)=-2.18$, $p<0.05$; Living with parents $t(44.39)=3.17$, $p<0.01$; Living further than 10 miles from Bangor $t(156.82)=0.17$, $p<0.01$; Living in own home $t(112.95)=4.35$, $p<0.01$).

The analysis of academic disciplines reveals that the Psychology group tends to show different results in Retention and wellbeing (factor 1), Belonging and support (factor 6), and Socialising (factor 2), compared to Social Sciences ($t(123.74)=-4.11$, $p<0.01$ for factor 1; $t(121.67)=6.38$, $p<0.01$ for factor 6; and $t(113.3)=-3.47$, $p<0.05$ for factor 2); as well as Healthcare ($t(79.46)=-3.43$, $p<0.05$ for factor 1; $t(94.70)=-4.96$, $p<0.01$ for factor 6; and $t(70.38)=3.70$, $p<0.01$ for factor 2) groups. Healthcare students show the lowest level of belonging to the university ($M=3.14$, $SD=0.878$), with the largest gap of 1.27 compared to Psychology group ($M=4.41$, $SD=0.974$) (Table 4).

Discussion

The study confirms the importance of belonging in retention, where academic engagement and social engagement both play vital roles. This finding aligns well with many previous studies which show that students' sense of belonging to their institution in higher education tends to be captured, determined, and operated mainly by way of academic and social engagement; and it also supports the strong consensus about the

positive association between belonging and retention in higher education (Kuh et al. 2005; Osterman 2000; Tinto 1997, 1975; Thomas 2012).

It should be highlighted that academic engagement is not directly associated with social engagement; the study reveals that students' participation in various social activities has no direct impact on their experiences in the academic sphere. Our previous conceptual and qualitative analysis using the 10 Words Question instrument demonstrated that academic and social engagements are independent, and therefore, should be treated separately (Ahn and Davis 2019).

Social engagement was itemised in this study to reflect a wide spectrum of students' life in the higher education context including what activities students participate in such as online communication; how often they do; with whom. The level of satisfaction with their social life as a student was also measured. The importance of participating in extra-curricular activities is highlighted in Buckley and Lee (2018)'s large-scale qualitative study of higher education institutions in Ireland, and Knifsend (2018)'s quantitative research in the USA. Similarly, another quantitative study of American college students which measured belonging based on Tinto's theory (1987) found a strong association between social engagement, belonging and retention (Hausmann et al. 2007). It should be highlighted that socialising (factor 2) is the only factor to show the differences in terms of age, ethnicity, academic disciplines as well as all the socio-economic indicators. Participants whose demographic characteristics and social class are categorised as non-traditional or disadvantaged groups are less likely to participate in various social activities and more likely to be dissatisfied with their social life.

On the other hand, the importance of academic engagement, particularly with academic staff was confirmed by recent quantitative research on students' academic

experiences in the UK (Webb and Cotton 2018), Australia (Richardson and Radloff 2014; Xerri et al. 2017) and the USA (Soria and Stebleton 2012). Academic interaction with staff can be crucial to students' belonging and their identity (Carter et al. 2018; Slaten et al. 2018).

Further examination of various demographic and socio-economic factors revealed notable differences between certain groups, although the aggregate data tend to obscure them. The participants living with parents or guardians, in their own home, further than 10 miles away from the university, are more likely to consider leaving the university than those living alone or with friends, living in university halls or closely to the university. In addition, students who receive the means-tested university bursary tend to have a weaker sense of belonging. The findings support the existing research about students' accommodation types (Brooman and Darwent 2014; Wilcox et al 2006), distance to the university (Kane et al. 2014; Pokorny et al. 2017; Yorke 2016), social class (Reay et al. 2002; Rubin and Wright 2017) and its negative relation to belonging.

While students' socio-economic status turned out to be crucial to belonging and retention, the effects of demographic characteristics are less recognisable in this study. For instance, there is no statistical difference found in belonging and retention between young and mature, female and male, and disabled and not-disabled groups. This might be because the process is less direct and causal, therefore, less visible (Kahu and Nelson 2018, 60). Mature students, for instance, are more likely to consider dropping out (Webb and Cotton 2018) because they are more likely to struggle with extra commitments such as family, financial and work responsibilities (McCune et al. 2010; Reay et al. 2002), rather than simply because they are older than others. Criticising the consensus about maturity functioning as a barrier in higher education, Chung et al. (2017) argue that mature students tend to cope with pressure in the university better

than young students due to their rich life experiences. The rather contradictory findings about maturity in the higher education setting highlight the lack of research investigating how these demographic and socio-economic factors affect students' feeling of belonging as well as their decision to leave (Kahu and Nelson 2018).

National identity and academic disciplines are two indicators confirming differences in both belonging and retention. The students who identify themselves as Welsh or study Healthcare Sciences are likely to feel lower belonging and to be more inclined to consider leaving the university. Both groups tend to include a larger proportion of bursary recipients (71.0% for Welsh, 77.3% for Healthcare), living with parents or guardians (28.3%, 51.5%), in their own home (44.2%, 59.1%), further than 10 miles away (39.1%, 59.1%). In contrast, Psychology students can be described as more typical 'traditional' students; being young (M=22), English (72.4%), living alone or with university friends (89.7%), in privately rented homes (86.2%), in Bangor (84.5%) and less likely to be in receipt of a bursary (34.5%). Compared to the number of studies about nursing students in higher education (e.g. Andrew et al. 2014; Wray et al. 2014), there are few studies of Welsh students. Furthermore, this result seems to diverge from Baker and Brown's arguments (2008, 57) about the 'aspirational habitus'. Their research, which adapts Bourdieu's (1977) concept of 'habitus' in the educational milieu in rural Wales in the mid-20th century, shows how routes through education helped students from economically disadvantaged backgrounds to access elite positions in Wales. Their research using biographical data reveals that all participants felt a strong sense of belonging to schools and higher education institutions, despite their socio-economic backgrounds. The sample of Welsh students in the present study is from a different generation and not predominantly from rural backgrounds, so it is likely that the habitus is not directly comparable.

Further research is needed to explore how multifaceted students' demographic and socio-economic backgrounds affect their academic and social engagement. In terms of national identity, particularly Welsh students' belonging to Welsh institutions should be investigated further, considering its importance for cultural identity, familiarity, and attachment to surroundings, and geographical and social mobility, which was uncovered from the previous research (Ahn and Davis 2019). Institutional contexts such as educational ethos, structure of disciplines, and vocational orientation also need to be explored comprehensively. As Yorke's research across 13 universities in the UK revealed, there is a wide range of differences in belonging, engagement and self-confidence depending on students' backgrounds (Yorke 2016, 163). A longitudinal study applying quantitative measurement of belonging and retention would contribute to the debate on transition, as recent research (Tett et al. 2017) confirmed that some students may develop their belonging gradually. Academic staff's sense of belonging is also an important topic to investigate insofar as it influences students, especially when they feel disengaged (Shields and McGinn 2011).

Conclusion

This study confirms that students' sense of belonging in higher education is strongly associated with retention, where both academic engagement and social engagement are crucial and function independently. The results provide useful resources for increasing students' prosperity and wellbeing in the future. Our findings suggest that the strategies to make an immediate impact on students' living environment such as accommodation and transportation will be particularly beneficial to students' social engagement and hence belonging. If students' belonging is to be used to promote academic success and

retention, more conceptually refined approaches and empirically detailed evidence will be required, reflecting the importance of social engagement.

Institutional policies for student participation in social activities should be organised with much regard for those who have difficulties due to their socio-economic status. The findings from this study can be incorporated into future research on widening access research. Although this research has not been directed toward policy analysis or recommendations, the findings can be taken to mean that an undifferentiated view of students' sense of belonging to an institution may result in poorly targeted and ineffective policies, as the aggregated data tends to obscure such differences.

The findings of this study support the notion of non-traditional or disadvantaged students and the importance of belonging and retention in these groups. However, the question has arisen about how certain factors operate, as it appears that they could lead to the contrasting results. The findings should prompt a re-evaluation what we consider to be the sources of 'disadvantage', such as social class, age and ethnicity. Current educational research in higher education in the UK has often paid insufficient attention to the process of how demographic characteristics function as barriers to cause educational inequality. Our discussion should therefore enrich a current strand of research about an understanding of belonging and disadvantage, and specifically the quantitative approach to the student experience in British higher education.

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Declaration of interest statement

No potential conflict of interest

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Table 1 Profile of participants in the survey

Table 2 The summary of the principal component analysis results PCA (N=333)

Table 3 Correlation analysis results between six factors

Table 4 Descriptive analysis of belonging, retention and satisfaction variables with means (M) and standard deviation (SD) by demographic and socio-economic indicators