Fitting in on Campus: How Acculturation Orientations Shape International Students' Experiences of Restorativeness, Felt Belonging and Comfort

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I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other university.

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Abstract

Working from the cross-cultural, social and environmental psychology perspectives, this thesis investigates where international students in a UK university experience belonging and restorativeness on campus. This thesis starts by introducing the broad perspectives of work already done in this domain (i.e., Chapter 1 of the thesis). Following that are three empirical chapters which contain five studies, they are: Study 1 ($n = 391$), a cross-sectional survey that examined the physical spaces on campus that university students stereotypically associate with international students, how those spaces are perceived in terms of their purposes, and the descriptions of international students who occupy the spaces (i.e., Chapter 2 of the thesis); Study 2 and 3 ($n = 260$ and 244 respectively) that experimentally tested how being in campus spaces with different social profiles (i.e., majority-owned versus minority-owned) impact on international students' experiences of space and academic performance (i.e., Chapter 3 of the thesis); Study 4 ($n = 294$), a cross-sectional survey, and Study 5 ($n = 174$), a longitudinal survey, both of which explored the campus spaces international students freely use, felt comfort in specific campus spaces, and felt belonging of the campus as a whole in relation to their group identification on campus and well-being outcomes (i.e., Chapter 4 of the thesis). Altogether, the empirical work presented in this thesis paints a picture of international students' psychological experience of campus spaces in a British campus, and specifically of the factors shaping their feeling of belonging in the campus that they have come to study. This thesis ends by discussing the implications for research at the theoretical level, and some practical applications for the university management, simultaneously pointing towards interesting directions for further research in this area.

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Chapter 1

General Introduction

"To be human is to live in a world that is filled with significant places:

to be human is to have and know your place" (Relph, 1976, p.1).

Physical spaces and places can have profound impact on an individual's psychological experience. People can form emotional attachments to specific places and spaces, and being in these can trigger memories and meanings that contribute to a sense of continuity (see Lewicka, 2011, for an overview). Specific places/ spaces are attached to groups and communities and therefore become central to facilitating and supporting group life (e.g., Minam & Tanaka, 1995). Spaces and places can also provide refuge from the stress and strain of life and therefore support emotional and cognitive restoration (Collado et al., 2017). Although the value of specific places and spaces cover many contexts and scales, these issues play out richly on university campus. For example, certain campus spaces such as the library or sports centre might appeal more to certain students, resulting in more frequent visits that eventually, over time, become part of individual identity (Hidalgo & Hernandez, 2001). University campuses also typically have a variety of spaces that cater to the needs of specific groups and communities. The ways in which students use space, and the emotional attachments they form to specific places on campus might help them as they deal with stress and engage with learning and scholarship.

Perhaps reflecting some of these concerns, numerous efforts have been taken by the university management and campus building developers to design better learning spaces for students in higher education. Priority has been given to creating a "learning landscape" that is capable of facilitating (1) both formal and informal learning, (2) a sense of belonging, and (3) community building that includes students from diverse backgrounds (Elkington & Bligh, 2019). In decisions about campus design, much emphasis has been given to the physical

features of campus space such as different window views, plants, and murals (Felsten, 2009) or different layouts of learning space floor plan (Waldock et al., 2017) that might appeal to students and enrich their perceptions of the campus, and studies have shown how these kinds of design choices affect students' engagement with and use of their campus space and overall quality of life during their studies (e.g., McFarland et al., 2008; Webb et al., 2008).

The wider literature on environmental psychology has also paid considerable attention to the physical properties of space and how these affect inhabitants – including studies on lighting, noise, crowding, and decoration (see Gifford et al., 2011, for an overview). In this literature, less attention is generally given to the social meaning of space. This thesis aims to address this gap by examining the social properties of learning spaces in a UK campus. Specifically, this thesis focuses on where international students in a UK university experience belonging on campus. This thesis contains three empirical chapters that successively map the campus spaces associated with different groups on campus (Chapter 2), experimentally test the consequences of being in majority- versus minority- owned spaces among international students (Chapter 3), and correlational and longitudinal studies that examine which spaces on campus that international students spontaneously use, and how this relates to their felt belonging on campus (Chapter 4). The specific theories guiding each empirical work are elaborated in the chapter introductions. In this introductory chapter, a broad overview of the main literatures that this thesis builds upon, which represents an integration of concepts from social psychology, environmental psychology, and cross-cultural psychology, is provided below.

Impact of belonging in university context

Space and belonging are intimately connected things: home is a place, but it is also a feeling. Strayhorn (2019) defined sense of belonging among tertiary education students as "students' perceived social support on campus, a feeling or sensation of connectedness, and

the experience of mattering or feeling cared about, accepted, respected, valued by, and important to the campus community or others on campus such as faculty, staff, and peers" (p. 4). All students may at some time worry about whether or not they belong on campus, or in their chosen degree programme. But a growing body of research suggests that concerns about belonging are especially salient for students from minority backgrounds, and that these concerns can disrupt their academic motivations and educational outcomes. For example, Walton and Cohen (2007) found that activating belonging concerns by heightening awareness of the numerical under-representation of their group in a degree programme undermined minority students' sense of fit and motivation to pursue studies in that degree programme. This manipulation, however, had no effects on majority students' academic motivations in the same domain.

In interpreting these patterns, Walton and Cohen (2007) suggested that minority students might not only be more aware of their lack of belonging within the wider student body, but also that they may interpret other stressors through the lens of not belonging – that is, hardships experienced during their studies might be seen as additional signs of their incompatibility with their environment. Following this reasoning, Walton and Cohen (2011) tested the effects of a brief social-belonging intervention on new students' performance across their course. This intervention simply framed adversity as a common but transient experience on campus, and retrained students to interpret hardship through this alternative lens of shared experience. In comparison to a control condition, this intervention improved African-American (but not White) students' certainty about their belonging and, in turn, contributed to better well-being and health outcomes and better academic performance – effects that persisted three years after the intervention. Together, these studies show that a sense of belonging matters for motivation and performance in the education setting, especially among minorities who might be particularly concerned about they do indeed fit in with others in this setting.

Belonging is, perhaps, most obviously communicated through relational parameters – that is whether the individual knows specific others in their local environment who they can turn to for support. But belonging can also be communicated in subtle ways, including through the objects and symbols that populate the environment that one is in, and what these imply about who belongs in this place. Illustrating this, Cheryan and colleagues (2009) found that being in a computer science department that implied ownership by men (e.g., containing objects stereotypically associated with male "geeks") reduced women's motivation to pursue careers in STEM (Science, Technology, Engineering and Mathematics) relative to an environment decorated with more gender-neutral objects. More important, the effects of being in such environments were mediated through a sense of "ambient belonging" – that is the individual feeling that they would "fit in" in that place. Similarly, more recent work found that the availability of campus spaces specifically for minority students can send a supportive message to minority students even if they are not using those spaces themselves. For example, Kirby and colleagues (2020) found that reminding ethnic minority students about the existence of a student resource centre for their ethnic group increased their sense of belonging and perceptions of institutional support, as well as improving academic engagement in their courses, and engagement with campus as a whole. The above studies together demonstrate how either being in, or having access to identity-compatible spaces is psychologically beneficial to minority students. This knowledge, in turn, would suggest that providing identity-compatible spaces for diverse students on campus should play a role in supporting academic success.

Campus spaces as restorative environments for students

The physical properties of spaces might also support positive psychological outcomes among students, and the field of environment psychology has a long history of exploring the psychological consequences of different environmental features. One dominant perspective in this field is attention restoration theory (Kaplan, 1995; Kaplan & Kaplan, 1989). Very briefly,

attention restoration theory revolves around the distinction between two forms of attention – voluntary (or directed) attention and involuntary attention. Voluntary attention is effortful, requires concentration, and therefore is subject to fatigue, whereas involuntary attention is effortless, occurs spontaneously, and does not require conscious control. According to the theory, different environments allow this switching of attention, and therefore can be sources of mental fatigue versus restoration. For example, urban environments require vigilance, are cognitively demanding, and therefore contribute to mental fatigue. In comparison, natural environments engage involuntary attention mechanisms and allow cognitive capacity to restore. From this perspective, the mentally fatigued person should do better after taking a break from built environments and engaging somehow with nature – for example, by going for a walk in a park or even just looking at images of nature (Berman et al., 2008). Following that, research has shown that a variety of non-natural environments have also displayed restorative properties, such as museums (Kaplan et al., 1993) and places of worship (Herzog et al., 2010; Oullette et al., 2005).

Moving beyond the physical form of environments (i.e., built versus natural), attention restoration theory identifies four properties that are central to restorative experiences: Being away, extent, fascination, and compatibility (Hartig et al., 1997). Being away is the experience of being transported away from routine activities. Extent is the experience of coherence and structure within the environment. Fascination, argued by some to be the most important element of restoration (Staats, van Gemerden, & Hartig, 2010), refers to presence of interesting or beautiful elements in the environment that effortlessly capture and hold attention. Finally, compatibility refers to the ability to be oneself and pursue personally important goals in the environment. To the extent that environments are perceived to have these properties they should also be restorative.

For decades, attention restoration theory mostly highlights how the physical properties of an environment (e.g., presence of natural elements) can contribute to positive psychological

experiences among individuals within the environment. Relatively less theoretical attention has been given to the social properties of environments and to identifying which social features create restorative experiences. Specifically, as one moves from nature to more socially defined spaces, such as museums (Kaplan et al., 1993) and religious buildings (Ysseldyk et al., 2016), the role of social considerations – for example, the individual's group memberships and identities – in restorative experiences seems critical. Research has found that identity-consistency (i.e., the degree of congruence between the individual's salient identity and the environment they were viewing) had a stronger effect on subsequent motivational and cognitive states (Morton et al., 2017). This thesis aims to examine the identity-consistency campus spaces among international students in relation to their academic performance and well-being outcomes.

Campus space, international students and acculturation orientations

One argument I make throughout this thesis is that the consistency between individuals and spaces on campus cannot simply be assumed based on social categories and group memberships – for example, by virtue of being international students. Instead, individuals who share a common group membership might still experience different setting as compatible with their own individual sense of self. This raises the question of which individual differences are relevant to shaping that feeling of compatibility with one's environment. This thesis focuses on international students in a UK university. International students have chosen to temporarily leave their home country and travel to another country for the purpose of education. Although international students do share at least one common motivation – that is education – their acculturation orientations can diverge in ways that shape their experiences differently during the period of sojourn.

One important difference between individuals is how they orient towards the two cultures that they are travelling between: Their culture of origin and the host culture they find

themselves in. These differences are often termed 'acculturation orientations' and have been widely studied in the context of both long term migration, but also more temporary stays, for example those of international students (e.g., Ramos et al., 2016). More formally, acculturation could be defined as "the dual process of cultural and psychological change that takes place as a result of contact between two or more culture groups and their individual members" (Berry, 2005, p.698). According to psychological models of acculturation, there are two dimensions along which individual orientations vary, namely (1) the desire to maintain one's own group's culture and identity, and (2) the desire to engage in daily interactions with other ethnocultural groups in the larger society (Berry & Sabatier, 2011). Some individuals are highly motivated to maintain their culture of orientation, whereas others are not. Some individuals are highly motivated to engage with the host culture, whereas others are not.

From the combination of these two dimensions, four distinct profiles, or strategies are derived: (1) marginalization, where the individual has little interest in their own cultural maintenance or relations with dominant culture members, and consequently is not motivated to socialize and communicate with either ethnic peers or dominant host culture members; (2) separation, where the individual is interested in maintaining his or her own cultural identity while avoiding relations with the dominant host culture members, and consequently socializes and communicates with ethnic peers; (3) assimilation, where the individual is not interested in maintaining his or her own cultural identity, but instead wants to fully engage with the host culture, and consequently socializes and communicates with the dominant host culture members; and (4) integration, where the individual is interested in simultaneously maintaining his or her original culture and having relations with the dominion host culture members, and consequently socializes and communicates with members of both cultural groups (Barry & Grilo, 2003; Berry & Sabatier, 2011). A graphic representation of these four acculturation orientations is outlined in *Figure 1.*

High

Engage with
other
ethnocultural
groups in the
larger society

Assimilation   Integration

Marginalization   Separation

Maintain one's own
group's culture and
identity

Low   High
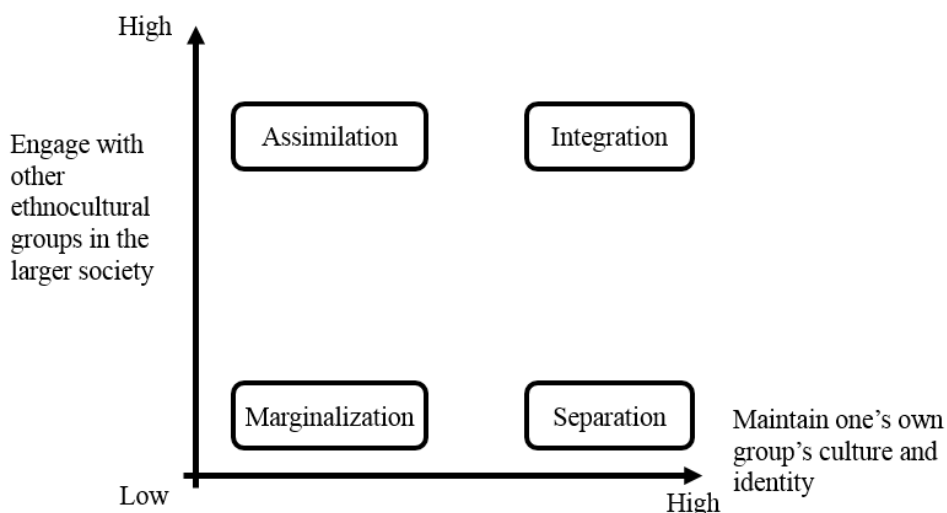
Figure 1: Four acculturation strategies situated according to Berry's bidimensional model of acculturation.

In the same way that acculturation orientations are thought to guide interactions with individual members of the minority and cultural majority groups, acculturation orientations should have some bearing on the spaces and places that minority individuals approach (versus avoid) and how they feel when they find themselves in those spaces. Specifically, the provision of "separate spaces" for the minority group within the host society, should appeal more strongly to individuals who are motivated by cultural maintenance, whereas individuals motivated to engage with the host culture should find the idea of separate spaces less appealing. Conversely, individuals oriented towards the host culture should respond more favourably to spaces that support their desired connections with the majority group, whereas individuals more strongly motivated by cultural maintenance might shy away from such majority spaces.

In this way, some consideration of individual differences in acculturation orientations – which we might think of as more specific 'identity goals' – should determine more precisely which spaces are experienced as identity compatible versus not. Following this logic, this thesis consists of five studies that explored how acculturation orientations affect the experiences of different campus spaces among international students. Throughout these five studies, we consider cultural maintenance and host orientation as two separate dimensions that together

capture the main differences in acculturation orientations that international students might hold while avoiding the assumption that high host orientation will necessarily lead to low culture maintenance orientation, and vice versa (Berry, 2009).

Campus spaces in this thesis

On the specific campus where this research was conducted, like many other campuses, physical spaces vary in their social meaning, for example via their connection to different student study majors (e.g., "the Physics and Engineering School", "the Institute for Arab and Islamic Studies"). Beyond this, there are also campus spaces that cater for specific subgroups in the student population. The most obvious example of this is the "INTO Building", which provides services and support for international students as they progress in their studies. Although this building is open to all, and includes its own cafeteria, it is frequented by students from minority ethnic backgrounds and is rarely used by majority British students. This building is situated at the centre of campus next to "The Forum", the main building that provides services and support to all students, and includes its own cafeteria and food outlets. Because this space is for all students, it is inevitably dominated by students from the British majority group. The results of a survey (i.e., Study 1 elaborated in Chapter 2 of the thesis) of British and international students confirmed that these spaces are associated with different groups. These buildings are part of the same era of campus development and as such share many architectural features (i.e., they are both modern buildings, with large windows and light, and that incorporate smooth natural shapes and wood elements into their design; refer to Appendix C for images).

Thesis overview

The ideas presented in the studies mentioned in the literature review converges with the idea captured by the opening quote – namely, that physical environments have social and psychological consequences by signaling who belongs and where. The overarching purpose of

the research contained in this thesis is to explore in more detail this possibility regarding what it means for the experiences and outcomes of international students on campus. The thesis is structured around three empirical chapters, each of which containing studies that interrogate different aspects of this question using different methods. These studies are briefly sketched out below.

Chapter 2

Chapter 2 contains a survey study (Study 1: $n = 391$) which aimed to provide some necessary context to the experimental work that follows in Chapter 3. In this study, we examined the physical spaces on campus that university students stereotypically associate with international students, how those spaces are perceived in terms of their purposes, and the descriptions of international students who occupy the spaces. By exploring these questions from the perspectives of both British students and non-British students, we could establish whether there are certain spaces on campus that are stereotypically "owned" by each of these groups.

In brief, the findings of this survey provide a number of useful insights into how international students are positioned on campus. Of all the spaces that one might find international students on campus, the most prominent spaces associated with this group were INTO Building (i.e., English language learning centre for international students), the Forum Library (i.e., main library in the campus), and, to a lesser extent, the Forum more generally (i.e., multi-functional building for all students). Next, Study 1 revealed some stereotypes and environmental differences about the spaces that international students inhabit, and predictable divergence in these stereotypes between British and international students.

Chapter 3

Taking as a backdrop the stereotypic association between different groups and specific campus spaces, Chapter 3 contains two field experiments (Study 2: $n = 260$; & Study 3: $n = 244$) that tested how being in campus spaces with different social profiles (i.e., majority-owned versus minority-owned) impact on international students' experiences of space and academic performance. Specifically, we were interested in the role individual differences in acculturation orientations would have in making different learning spaces more or less fitting to the self. Drawing on the acculturation literature we predicted that for individuals oriented to the host culture (i.e., higher on host orientation), majority group spaces should be more fitting to their identity goals; whereas for individuals oriented to maintain their minority culture (i.e., higher on home orientation), minority spaces should be more fitting to their identity goals. Drawing on the literature on ambient belonging, we also predicted that identity-compatible spaces would be experienced most positively and lead to most positive outcomes in terms of performance.

In both field experiments, international students were randomly assigned to attend either a "majority space" (i.e., inhabited mainly by White British students) or a "minority space" (i.e., inhabited mainly by international students). Each individual study in this chapter revealed a slightly different pattern of effects. However, an internal meta-analysis (total $N = 618$) of these studies, plus an additional previous study using the same design (conducted as an MSc project) revealed that the higher the home orientation of international students, the more they experienced minority-owned space as restorative, a finding that was consistent with expectations. However, restorative experiences in majority-owned space were not affected by the host orientation of international students, as would also have been expected. Moreover, there was no evidence for further effects on performance. Despite these caveats, the combined studies do provide at least some evidence that the social properties of space, and the possible meanings attached to those spaces via acculturation orientations, combine to impact individual experiences within different spaces.

Chapter 4

The studies reported in Chapter 3 experimentally manipulated participants to be in specific spaces in order to examine their effects. To complement this approach, Chapter 4 consists of a cross-sectional survey (Study 4: n = 294) and longitudinal survey (Study 5: n = 174) both of which explore the campus spaces international students freely use. Connecting to the overall themes of this PhD, we were interested in how the use of space on campus is related to acculturation orientations, and how different patterns of space use might contribute to feelings of connection to the university (i.e., identification) and well-being (i.e., personal self-esteem, resilience, and satisfaction with life).

Study 4 revealed a similar pattern to previous experimental studies. Feelings of comfort within specific spontaneously-used spaces again reflected a pattern of identity compatibility: Host oriented international students reported experiencing more comfort in majority-owned spaces, whereas home oriented international students reported experiencing more comfort in minority-owned spaces. In addition, analyses revealed that feelings of belonging on campus was a stronger predictor of well-being outcomes than identification with specific groups on campus, namely multiple group memberships and identification with other students (including international students).

Following up on these cross-sectional patterns, Study 5 aimed to examine the temporal dynamics between individual acculturation orientations, use of campus space, patterns of identification with the university and well-being outcomes across international students' first year of study (i.e., first three months of their degree studies; September to December 2019, four time-points). Cross-lagged analyses revealed that across international students' first semester, host orientation was only weakly associated to feelings of belonging on campus, and did not link significantly to well-being outcomes. Despite that, this study again revealed that international students high on home orientation and low on host orientation felt more comfortable in campus spaces that contained a higher proportion of international students.

Chapter 5

Chapter 5 comprises a summary of the findings for all five studies in this thesis, followed with a general discussion regarding the implications (both theoretical and practical) and main limitations of this thesis. This chapter addresses how the specific findings of each study in the thesis contributes to the current literature of acculturation orientations among international students, campus space usage and experience, and well-being outcomes. This chapter ends with a statement of the conclusions that can be drawn from the thesis as a whole.

Chapter 2

Campus Space Stereotypes among British and International Students in a UK University

Abstract

This chapter describes a cross-sectional survey study (n = 391) that aimed to explore stereotypes about spaces on a UK university campus and, in so doing, provide us with a map of which spaces were stereotypically "owned" by different groups on campus. We were specifically interested in the physical spaces that are stereotypically associated with international students (a minority on campus), what purposes those spaces are perceived to serve for that group, and how the international students who occupy these spaces are described. We explored these questions from the perspectives of both majority-group British students and international students themselves, allowing us some insight into whether there is consensus about the spaces "owned" by each group. Broadly, the survey study confirmed our assumption that the INTO Building (i.e., English language learning centre for international students) is a "minority-owned" space, and that The Forum is a space in which international students are perhaps minimised in the eyes of the majority group (i.e., British students). In that sense, the Forum appeared to be a "majority-owned" space. This study also revealed specific stereotypes about the spaces that international students inhabit, and a predictable divergence in these stereotypes between British and international students. Though not conclusive in any way, these patterns suggest that international students might be seen as "out of place" when they stray into territory owned by the majority.

Introduction

Physical places can become attached to different social categories. For example, in many culturally-diverse, migrant receiving countries, urban versus rural/ natural locations are differentially associated ethnic majority and minority groups. In the United Kingdom (Ware, 2015), but also Australia (Cloke, 2006) and the US (Anderson, 2012, 2015), the countryside is perceived as a "White space", whereas ethnic diversity "belongs" in the city. This mapping of people to places might partly explain why non-White people sometimes feel "out of place" when they visit rural locations. Illustrative of this, interviews with residents of rural villages in England showed contrasting viewpoints across ethnic majority and minority groups: White residents perceived their village communities as both close-knit and welcoming to incomers, but ethnic-minorities residents felt pressure either conform to the norms of the majority or be excluded (Garland & Chakraborti, 2006). Although residents share the same physical space, broader stereotypes of "who belongs where" set a backdrop for different experiences within that place as a function of one's group membership. In this chapter, and the thesis as a whole, we are interested in a similar phenomenon as it occurs on campus at a UK university, a place in which British students are the majority and international students are the minorities.

The social landscape of university campus

Ethnic/ racial groups experience typically university campuses differently. For example, one qualitative study examining the experiences of Black and Minority Ethnic (BME) academics working in England and Australia found that members of this group felt like "space invaders" on the predominantly White university campuses (Lander & Santoro, 2017). Qualitative and quantitative work dovetails with this picture. Sudanese refugee students who arrived at schools in rural White communities of Australia described the feeling of being highly visible and "out of place" (Edgeworth, 2015). Similarly, on US university campuses, students from minority ethnic backgrounds display heightened concerns around their belonging, and

accordingly are more sensitive to cues that signal their inclusion or exclusion in that environment (Walton & Cohen, 2007). One thing that can counteract concerns about exclusion and "out of placeness" is when campus provide a designated space for one's group.

Illustrative of this, recent research found that informing ethnic minority students about the construction of a new student resource centre specifically for their ethnic group resulted in increased sense of belonging, perceptions of institutional support, and academic engagement (Kirby et al., 2020). Together, this literature suggests that mapping of place and identity may be important for understanding the experiences of minorities in educational settings. The aim of the survey presented in this chapter was to reveal this mapping and in so doing establish the "landscape" on which the remainder of our studies were set (detailed in Chapters 3 and 4). Specifically, this survey aimed to identify the physical spaces on campus that university students stereotypically associate with international students, how those spaces are perceived in terms of their purposes, and the descriptions of international students who occupy the spaces.

Individual differences and the perceptions of people and places

The overall frame of research presented by this thesis is guided by the idea that individual members of a minority group (i.e., international students) might respond differently to specific campus spaces according to their specific 'identity goals'. In elaborating our ideas about this, we draw on Berry's influential model of acculturation (see Sam & Berry, 2010, for a recent overview). According to Berry's model, when individuals move from one culture to another, they are faced with questions of who they are, who they want to be, and where their place is in the new culture. The answers people give to these questions results in variation along two dimensions: (1) the desire to maintain sense of identity embedded in one's culture of origin (termed "home orientation" in this chapter), and (2) the desire to engage with other ethnocultural groups and the larger society (termed "host orientation" in this chapter). Reflecting these desires, individuals higher in home orientation tend to preferentially socialize

and communicate with same ethnic peers, and to avoid relations with the dominant host culture members; whereas individuals higher in host orientation tend to preferentially socialize and communicate with members of the dominant host culture (Barry & Grilo, 2003; Berry & Sabatier, 2011). Members of the host culture can also differ in how they expect minorities to behave in relation to their own and host culture. These individuals might expect minorities to assimilate fully into the host culture (i.e., melting pot), or to separate themselves according to their respective ethnicity groups (i.e., segregation), expectations that will influence how the behaviour of minority individuals is perceived.

Although these dimensions are sometimes combined into 4 distinct categories of acculturation orientation, more recent research advocates treating these as independent but interacting dimensions (e.g., Demes & Geeraert, 2014). More important, variations in these orientations has been linked to the success of cultural adaptation (Sam & Berry, 2010). For example, research conducted on a large sample of international exchange students from multiple countries studying in the UK found that students higher on host orientation showed better adaptation, whereas students higher on home orientation displayed worse adaptation (Demes & Geeraert, 2014). In addition, when acculturation orientations of the minority group match the expectations of the majority, intergroup relations tend to be more positive and resulted in better individual adjustment (Zagefka & Brown, 2002).

As we suggest later in this thesis, acculturation orientations might shape not just how individuals from minority and majority groups orient towards each other, but also how they orient towards the spaces associated with each group and therefore how they experience these spaces. For example, among minority students high on home orientation, minority owned spaces are likely to be perceived more positively because these facilitate their acculturation goals, whereas for those higher on host orientations (or for majorities who expect integration), these kinds of segregated spaces are likely to be perceived negatively, as are the people who use them.

To begin developing our social map of the campus, and to exploring how the perception of social marked spaces might vary according to individual identity goals, the current study also included measures of individual difference in acculturation orientation (on the side of the minority) and acculturation expectations (on the side of the majority). Because the goals of this preliminary study were open and descriptive, we did not have any specific hypotheses. That said, given the campus on which this research was conducted – a campus that contains a specific building for international students (i.e., INTO Building) – we did expect that participants' associations between people and campus spaces would reflect the social geography that is there. Thus, we did expect, for example, that international students would be stereotypically associated with the INTO Building. Of more interest, and less obviously, we were curious about the degree to which perceptions of who belongs where were consensual across groups (majority versus minority) and individuals within them (varying according to acculturation orientations/ expectations).

Methods

Design and Participants

According to University of Exeter website, there are a total of 23 613 students (UK = 17 230, EU = 1 828, International = 4 555) for academic year 2018/2019 (Facts and figures, 2019). Although this study was exploratory and not guided by explicit power calculations, according to G*Power calculator in order to detect a two-tail correlation point biserial model of medium to small effect size, $r = 0.2$ with 80% power and an alpha of .05, a sample size of 191 is needed. In total, 431 students of University of Exeter participated in this survey study. Of these, 40 participants were excluded from the final sample because they identified both as British and international status. Hence, the final sample is 391 students. Of these, 272 of which were members of the British majority group ($M_{age} = 20.15$, $SD = 3.22$, age ranging from 18 - 61; 83 male, 187 female, 1 other, and 1 did not state gender), and 119 were EU or international

students (M_{age} = 20.92, SD = 2.50, age ranging from 18 - 28; 44 male, 74 female, and 1 did not state gender).

Procedure and Materials

After obtaining the approval of Psychology Research Ethics Committee (PREC), the survey was disseminated through two methods: (1) online via the Psychology Research Participation System, and distribution on other social media platforms such as Facebook Groups and WeChat Groups, and (2) manually by approaching university students in a variety of locations on campus (e.g., the Forum, Devonshire House, Queens Building café, and other common areas) to fill in a paper version of the survey. Informed consent was obtained from the participants prior to answering the survey, and participants could choose to receive 0.5 credit for PSY1206 (for first year psychology undergraduate students) for their time in completing this survey.

In the survey, participants were first asked three open questions, namely: (1) "Where (on campus) do you find, or would you expect to find groups of international students?" (2) "Thinking about the spaces you have listed, what do you think the purpose of these spaces is to international students?" and (3) "How would you describe this subset of students who occupy the spaces you have listed? List both positive and negative qualities that you think apply to the students who use that space." [1]

Next, participants with British status were directed to fill in the Two Acculturation Dimensions Scale, adapted from Ramos and colleagues (2016). This measure has 17 items with 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree), measuring two subscales, (1) international students should participate in the British community, (sample item: "international students should feel at ease with British people", total 8 items, α = .80), and (2)

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[1] We also asked the same open-ended questions about two other student groups: working class students and LGBTQ students. Because the main interest of the work in this thesis is international students, I only report data relating to international students.

international students should orient towards their own culture maintenance (sample item: "international students should want more friends of their own nationality", total 9 items, α = .70). Refer to Appendix A for instructions and full items for this measure.

Participants who were themselves international status also completed this measure, but from their own perspective, that is (1) my own willingness to participate in the British community (sample item: "I feel at ease with British people", total 8 items, α = .70), and (2) the value I place on maintain my own culture (sample item: "I would like to have more friends of my own nationality", total 9 items, α = .75). Refer to Appendix A for instructions and full items for this measure.

Following this, the participants were asked questions about their demographic details, such as age, gender, nationality, current academic programme, societies and clubs, and international status. At the end of the survey, participants were thanked for completing the survey. Data collection was conducted between mid-January to end of March 2018.

Results

Preliminary checks

Preliminary analyses were conducted to ensure that there were no violations of the assumptions of analyses. Each scale was checked for normal distribution through visual inspection of histograms and the values of skewness and kurtosis. Outliers were identified through visual inspection of boxplot. All outliers were retained in the analyses reported because removing them did not have any substantive effect on the patterns reported in this chapter.

Next, the pattern of acculturation orientations/ expectations was compared across British (majority group) and international (minority group) students. T-tests revealed no significant differences between the two groups, on host orientation/ expectation $t(389) = -0.741$, $p = 0.459$, or home orientation/ expectation, $t(388) = -0.303$, $p = 0.762$. However, acculturation orientations/ expectations correlated differently across groups: For British

students, the two acculturation expectations (i.e., $M_{\text{home orientation}}$ = 4.712, SD = 0.605; $M_{\text{host orientation}}$ = 5.107, SD = 0.769) were significantly positively correlated, r (271) = 0.271, $p < 0.001$, whereas for international students, the two acculturation orientations (i.e., $M_{\text{home orientation}}$ = 4.734, SD = 0.766; $M_{\text{host orientation}}$ = 5.169, SD = 0.767) were significantly negatively correlated, r (119) = -0.214, p = 0.020. This is suggestive of a perceived incompatibility between host and home orientations among the minority group, but this incompatibility did not exist in the eyes of the majority. However, it is worth noting that the size of these two correlations are small, suggesting that these are distinct (i.e., not redundant) orientations/ expectations within both samples of participants.

Correlation checks also revealed no associations between demographic details (age, gender, ethnicity, religious, actively practising that religion, level of programme, and active participation in sports or societies) and the acculturation orientation scales. Accordingly, analyses proceeded without covariates.

Spatial stereotypes

Following the initial checks, answers for the three open-ended questions in the survey were re-coded by three independent coders. Only answers related to INTO Building, The Forum and Forum Library were being focused. The descriptions given by participants were arranged according to the mentioned venues into 6 different categories, namely: (1) Purpose of these spaces to international students as achievement; (2) Purpose of these spaces to international students as affiliation; (3) Description of students in that space as noisy; (4) Description of students in that space as exclusive; (5) Description of students in that space as agentic; and (6) Description of students in that space as communal. Table 1a below shows some examples text of coding for these 6 different categories.

Table 1a. Example text of Coding for Each Categories

Categories		Example Text
Purpose of these spaces to international students	Achievement	Having classes, research work
	Affiliation	Socialising, chit chat
Description of students in that space	Exclusive	Speak in their own language, cliquey
	Noisy	Loud, noisy
	Agency	Hardworking, focussed
	Communal	Sociable, chatty

The correlation between the first two coders after an initial coding ranged from 0.40 to 0.94. The lower correlations in this range were mainly attributed to disagreement of the coding of spaces described as communal and noisy. After a discussion about the meaning of concepts, the correlation improved to 0.98 to 1.0. The remaining disagreements between the first two coders, which was limited to three items, were resolved by a third coder (see Appendix A Table 1b).

The question "Where (on campus) do you find, or would you expect to find groups of international students?" revealed that the INTO Building, Forum Library and The Forum itself, were the places on campus international students were most expected to be seen. 23.05% British students (versus 35.29% of international students) reported finding international students at The Forum; 60.38% British students (versus 54.31% of international students) reported finding international students at Forum Library; on the other hand, 66.91% British students (versus 65.55% of international students) reported finding international students at INTO Building (see Table 2 and 3 at Appendix A). These percentages of participants are based on those who mentioned answers in regards to the respective buildings. Interestingly, many of the popular socialising spaces of university students – for example Devonshire House (and eateries associated with this, like Pieminster), the Ram (student pub), the Quad at St Lukes,

and the sports centre were places where international students were less expected. This already suggests a degree of segregation in the places associated with majority and minority groups on campus, and alludes to different uses of the campus between these groups.

To understand this better, we focused the analysis of the remaining open questions on the three most commonly listed international spaces (i.e., INTO Building, Forum Library, and The Forum). The question "Thinking about the spaces you have listed, what do you think the purpose of these spaces is to international students?" was coded in relation to the broad purpose categories of achievement (e.g., studying or learning) or affiliation (e.g., meeting friends, socialising). These concepts map on to the fundamental dimensions of agency/ competence and communion/ warmth that dominate current models of social judgment (e.g., Abele & Wojciszke, 2007; Bakan, 1966; Fiske et al., 2007). Answers to the follow-up question "How would you describe this subset of students who occupy the spaces you have listed? List both positive and negative qualities that you think apply to the students who use that space." were coded into the descriptive categories of exclusive, noisy, agentic, and communal. Again, the codes "agency" and "communion" were chosen because they dominate current models of social judgment (as mentioned above). The code "exclusive" referring to the perception that students were behaving exclusively (versus inclusively) towards other people outside their own group, was chosen because this seemed to be a prominent theme in the data. The code "noisy" was chosen partly out of curiosity, but also because of the cultural trope of minorities being "noisy" when they gather together, especially in places they are not welcome.

As might be expected on a university campus, the purpose of each of the primary spaces was described more strongly in achievement than affiliation terms. 92.47% of British students (vs. 95% of international students) described the Forum library in achievement terms. Interestingly, 35.29% of British students (vs. 55.26% of international students) described The Forum in achievement terms. 68.97% of British students (vs. 85.33% of international students) described INTO Building in achievement terms (see Table 2 at Appendix A for more details).

These percentages of participants are based on those who mentioned answers in regards to the respective buildings.

The descriptions of international students in these three campus spaces revealed interesting results. From the British students' perspective, international students were described as more exclusive (mean = 19.96%) in all three primary spaces when compared to the description of international students given to themselves (mean = 10.61%). International students described themselves as noisy (35.29%) in The Forum, but not in the Forum Library (9.52%) and INTO Building (9.86%), however, British students labelled international students as slightly noisier in the Forum Library (10.87%) and INTO Building (12.73%), but much less noisy at The Forum (19.15%). In general, both British students (mean = 70.06%) and International students (mean = 63.01%) described international students as agentic in these three campus spaces; both British students (mean = 29.53%) and international students (23.04%) described international students as communal in these three primary campus spaces (see Table 2 at Appendix A for more details). Similarly, these percentages of participants are based on those who mentioned answers in regards to the respective buildings.

Group-based differences in perception

To explore whether students from different samples perceived the various spaces differently, we compared the answers given by these groups. A chi-square test for independence (with Yates' Continuity Correction) indicated that although there was no association between sample (British vs international students) and expecting to see international students in INTO Building or the Forum Library, there was a significant association between student group and expectations of The Forum, $X2$ (1, $n = 388$) = 5.697, $p = 0.017$, phi = 0.127. International students expected to see themselves in the Forum more than British students expected to see them there (35.29% versus 23.05%).

Interestingly, there was also divergence in the perceived purpose of these spaces for occupying groups, and of their behaviour within the space. Specifically, international students were slightly (though not significantly) more likely to describe the purpose of the Forum to their group in achievement-related terms than British students were (55.26% versus 35.29%), X2 (1, n = 89) = 2.763, p = 0.096, phi = 0.199, whereas British students were significantly more likely to describe the behaviour of international students as exclusive when they were in the Forum compared to international students describing their group in the same place (21.28% versus 2.94%), X2 (1, n = 81) = 4.197, p = 0.021, phi = - 0.264.

When describing the purpose of INTO Building, the most prominent international student space on campus, these groups again saw things differently. International students were more inclined to describe the purpose of INTO Building to their group in achievement than affiliation terms (85.33% versus 68.97%), X2 (1, n = 249) = 6.455, p = 0.011, phi = 0.171, whereas British students were more likely to perceive the purpose of this space to international students in affiliation than achievement terms (38.51% versus 20.00%), X2 (1, n = 249) = 7.310, p = 0.007, phi = - 0.181. All other chi-square tests are not statistically significant. Refer to Appendix Table 2 for all chi-square tests.

Together, these patterns suggest that INTO Building and The Forum, two central spaces on campus, might be marked by space-focused stereotypes. INTO Building is clearly a minority space where international students are expected to be found. Their presence there, however, appears to be dismissed by majority students as affiliative rather than for more agentic/ achievement related purposes. The Forum, perhaps more subtly, seems to be a majority space where the presence of international students is perceptually erased by the majority, and any presence they have there is perceived in exclusive, rather than integrated terms.

Individual differences in perception

To further explore potential differences in perspective, not just between student groups but within them, we examined whether the descriptions of each space varied according to individual acculturation orientations (among the minority) or acculturation expectations (among the majority). Among British students, correlational analyses revealed weak positive associations between expectations that international students should engage with the host culture, and the tendency to describe the purpose of the Forum Library to this group in affiliation terms, r (146) = 0.198, p = 0.017, and the behaviour of international students in that space as exclusive, r (138) = 0.208, p = 0.014. Conversely, British students who expected international students to maintain their culture of origin were less likely to describe international students in the Forum Library as exclusive, r (138) = - 0.231, p = 0.007. All other correlational analyses for participants with British status were not statistically significant.

Among international students, correlational analyses revealed that participants who were higher on host orientation tended to describe international students in the Forum Library in agentic terms, r (63) = 0.292, p = 0.020. The same participants were also more likely to describe the purpose of INTO Building for international students in achievement terms, r (75) = 0.251, p = 0.030, as were participants who were higher on home orientation, r (75) = 0.248, p = 0.032. All other correlational analyses for participants with international status were not statistically significant. Refer to Appendix Table 3 for all results of the correlational analyses.

The fact that individual differences, both among the majority and the minority, correlate with perceptions of international students in the library, suggest that this is a divided space – or a space with mixed or ambiguous associations. For majority group members who expect integration, minorities in this space were perceived to be behaving exclusively and to be motivated by desires to affiliate among themselves. Among international students who wanted to integrate with the host culture, their presence in the library was instead seen to be less exclusive and instead guided by achievement goals.

General Discussion

The findings of this survey study provide a number of useful insights into how international students are positioned on the campus that hosted the remaining studies in this thesis. Of all the campus spaces that one might find international students on campus, the most prominent spaces associated with international students were INTO Building (i.e., English language learning centre for international students), the Forum Library (i.e., main library in the campus), and, to a lesser extent, the Forum (i.e., multi-functional building for all students) more generally. Moreover, although the importance of INTO Building and the Forum Library to this group were consensually perceived, views about the Forum more generally differed across groups: British students did not expect to see international students there to the same degree as international students themselves did. To the extent that British students did see international students in the Forum, they also described international students as being exclusive. Broadly, these findings confirm that INTO Building is a "minority-owned" space (which is not surprising, given its actual purpose) and that the Forum is a space in which international students are perhaps minimised in the eyes of the majority group. In that sense, the Forum appeared to be a "majority-owned" space.

Following on from that, the survey study also revealed some stereotypes about the spaces that international students inhabit, and predictable divergence in these stereotypes between British and international students. To international students, the primary purpose of all spaces was achievement. British students, however, tended to describe the purpose of international spaces more in affiliative (i.e., social) terms, and less in terms of achievement motives. Interestingly also, when international students were in a clearly achievement relevant space – the library – their behaviour was perceived as affiliative and exclusive by British students who expected more integration from this group. Though not conclusive in any way, these patterns suggest that the behaviour of international students might be seen as "out of place" when they appear in spaces also used by the majority.

One limitation of the study is the usage of leading questions in Study 1, i.e., "Where (on campus) do you find, or would you expect to find groups of international students?" might appear to be suggestive that international students would be expected to be seen gathered in certain specific spaces on campus, rather than naturally found anywhere on campus, as similar to British students. This assumption might have impacted the results of the study by leading the participants to specifically think of possible prominent spaces on campus in which international students might be found or gathered. Next, the question "How would you describe this subset of students who occupy the spaces you have listed?" was asked in relation to international students in general, with the assumption that participants in Study 1 perceived all international students as homogenous rather than composing of variation in gender, ethnicity, religious beliefs, etc. The limitation of this is that the question might lead participants to generate stereotypes of international students as a homogenous group, neglecting the individual differences and variation in this international student category. Hence, caution needs to be taken when interpreting the findings in this chapter.

Overall, the findings of this exploratory survey study (i.e., Study 1) provided some necessary context for the more detailed studies that follow in Chapters 3 and 4. The field experiments reported in Chapter 3 explored how being in a majority-owned space (The Forum) versus a minority-owned space (INTO Building) impacts on international students' experience and academic performance, and whether these consequences are shaped by their own acculturation orientations. The cross-sectional and longitudinal studies reported in Chapter 4, explore the same dynamics at they play out in the spaces that students voluntarily used (rather than being assigned to in an experiment). Through these studies, we work from the assumption that INTO Building is stereotypically (and materially) dominated by international students, and therefore a minority-owned space, whereas The Forum is more strongly associated with the majority group of British students than it is with the minority.

Chapter 3

Campus Space Restorativeness and Acculturation Orientations

Abstract

Three field experiments (total $N = 618$) explored how the social properties of spaces on campus impact international students' experiences in those spaces, and the role of fit between the individual's acculturation orientations and their environment in shaping such experiences. We predicted that acculturation orientations (i.e., desires to maintain home culture versus to engage with host culture) would determine which spaces (i.e., minority dominated versus majority dominated) were fitting for individual international students and therefore experienced as restorative. Acculturation orientation were measured before participants were randomly assigned to be tested within a "majority space" or a "minority space". Self-reported restorative experiences and performance on academic tasks were dependent variables. Internal meta-analysis revealed some support for the predicted interaction: International students with stronger orientation to their home culture experienced minority (but not majority) space as more restorative. Contrary to predictions, restorative experiences in majority spaces were not predicted by stronger orientation to host culture, and performance outcomes were also unaffected by person-environment fit. These studies reveal the role of social processes in creating restorative experiences of physical environments.

Introduction

Universities in western countries have become increasingly multicultural, with students from many different backgrounds sharing the campus and learning together. Yet, campuses can still be segregated at the micro-level. For example, students from different backgrounds tend to sit at different tables in cafeterias and cluster together according to group membership (Clack et al., 2005). Similarly, students attending lectures become more segregated in their seating choices as the semester progresses (Koen & Durrheim, 2010). Sometimes, this kind of segregation is more formally codified in specific group-designated rooms or buildings on campus. For example, many campuses have LGBT spaces, or buildings that cater to ethnic minority students (e.g., Harper & Quaye, 2007; Poynter & Tubbs, 2008; Samura, 2016). As a result of this informal and formal segregation between groups, there are a variety of "socially marked" spaces on university campuses.

The existence of socially marked spaces is likely to be psychologically consequential. For example, simply knowing that a specific space exists for one's group within an organisation can improve individual well-being (e.g., Chaney & Sanchez, 2018), especially among individuals from minority groups who might be especially concerned about belonging (Walton & Cohen, 2007). Likewise, informing ethnic minority students about the construction of a new student resource centre for their ethnic group increased their sense of belonging, perceptions of institutional support, and academic engagement (Kirby et al., 2020). The belonging of one's group within a space can also be communicated in subtle ways, such as through the objects and symbols that populate the environment. For example, when female undergraduates contemplated their studies in a computer science classroom decorated with objects associated with male "computer geeks" (e.g., sci-fi posters), they experienced less 'ambient belonging' and consequently were less interested in computer science, than if the room was neutrally decorated (e.g., with nature posters) (Cheryan et al., 2009; see also Cheryan et al., 2011).

In line with these ideas, this research is concerned with the psychological resources that are conveyed by socially-marked spaces on campus for the people that inhabit them. The specific group we focus on is international students, and we compare their experiences of being in campus spaces that are either dominated by people from the host culture (i.e., majority group members) or dominated by students from different cultures (i.e., other minority group members). We are also interested in how individual differences in international students' acculturation orientations determine their experiences and outcomes in these socially-marked spaces.

Place-identity relationship

Although spaces might be broadly associated with specific groups of students (e.g., international student spaces; LGBT spaces; prayer rooms), not all individuals think about their group membership in the same way, and therefore might be expected to respond differently to the presence of group-specific spaces. Research has shown that migrants from one country to another – including temporary migrants, like international students (e.g., Ramos et al., 2016) – can differ in orientations towards their culture of origin and the new host culture they find themselves in. These differences encompass variations in who individuals want to be, affiliated with and which group memberships they prioritise in their self. Individual differences in these orientations, and how they affect migrant experiences and outcomes, have been explored in the literature on acculturation orientations. This literature is briefly summarised below.

According to Berry's model of acculturation (see Sam & Berry, 2010, for a recent overview), when individuals move from one culture to another, they are faced with questions of who they are and where they belong. In responding to these questions, individuals are likely to vary along two dimensions: (1) their desire to maintain connections to their culture of origin and the sense of identity embedded in this (termed "home orientation" in this paper), and (2) the desire to engage in daily interactions with other ethnocultural groups in the larger society

(termed "host orientation" in this paper). In theory, these dimensions are independent, and individuals can be high or low on either. Researchers working in this area typically distinguish between four distinct profiles – or acculturation strategies – that are created via the combination of these two dimensions: marginalization, separation, assimilation, and integration (Barry & Grilo, 2003; Sam & Berry, 2010).

Variation in acculturation orientations has been linked to different patterns of individual behaviour in intercultural contexts, and to the success or otherwise of their cultural adaptation. For example, a large cross-national study (Berry et al., 2006) found that immigrant youth with integration or assimilation profiles (i.e., those more oriented to the host culture) showed better national language proficiency and had peer networks that included more host nationals relative to those with marginalisation or separation profiles (i.e., those less oriented to the host culture). Conversely, immigrant youth with integration or separation profiles (i.e., more orientated to their home culture) tended to maintain ethnic language proficiency and to have peer networks that include ethnic peers more than those with assimilation or marginalization profiles (i.e., less oriented to their home culture). Overall, this study also found that immigrant youth with an integration profile showed better well-being (e.g., in terms of self-esteem and life satisfaction) and better sociocultural adaptation (e.g., better school adaptation and less problematic behaviour) than other acculturation profiles.

Similarly, research conducted on a large sample of international exchange students from multiple countries studying in the UK (Demes & Geeraert, 2014) found that measures of individual differences in host and home orientations showed opposing relationships with psychological and sociocultural adaptations: Students higher on host orientation showed better adaptation, whereas students higher on home orientation displayed worse adaptation. In the same way that acculturation orientations might guide the ways in which international students seek out contact with representatives of the host culture and/ or fellow international students, acculturation orientations might also determine the degree to which socially marked spaces on

campus 'resonate' with the individual and are experienced as places of belonging (e.g., following Cheryan et al., 2009).

For example, the provision of "separate spaces" for the minority group within the host society should appeal more strongly to individuals who are motivated by cultural maintenance (i.e., those higher on home orientation). Conversely, individuals who are motivated to engage with the host culture (i.e., those higher on host orientation) should find the idea of separate spaces less appealing and should instead respond more favourably to spaces that support their desired connections with the majority group. In this way, individual differences in acculturation orientations should determine more precisely which spaces are experienced as identity compatible versus not, and the psychological consequences that follow from (in)compatibility with one's environment.

Physical and social features of restorative versus distracting environments

Within the environmental psychology literature, there is a long history of exploring the psychological consequences of different environmental features. Here, however, the focus has mostly been on identifying the physical properties of environments that contribute to stress versus stress reduction, and to emotional and cognitive restoration versus depletion and distraction. Relatively less attention has been given to identifying – and fully theorising – how the social properties of environments contribute to positive, restorative, experiences.

One dominant perspective in this field is attention restoration theory (Kaplan, 1995; Kaplan & Kaplan, 1989). Attention restoration theory revolves around the distinction between two forms of attention – voluntary (or directed) attention and involuntary attention. Voluntary attention involves situations in which attention is directed towards tasks that are not inherently interesting. Voluntary attention is effortful, requires concentration, and therefore is subject to fatigue. Involuntary attention, in comparison, involves situations where attention is captured by stimuli that are inherently interesting. Involuntary attention is effortless, occurs

spontaneously, and does not require conscious control. According to the theory, switching from tasks that involve directed attention to those that instead engage involuntary attention provides the opportunity for mental restoration.

Importantly, the theory argues that different environments allow this switching of attention, and therefore can be sources of mental fatigue versus restoration. For example, urban environments require vigilance, are cognitively demanding, and therefore contribute to mental fatigue. In comparison, natural environments engage involuntary attention mechanisms and allow cognitive capacity to restore. From this perspective, the mentally fatigued person should do better after taking a break from built environments and engaging somehow with nature – for example, by going for a walk in a park or even just looking at images of nature (Berman et al., 2008). Although attention restoration theory prioritizes the idea of nature as a restorative environment, in theory at least as many environments could be restorative. Indeed, a variety of non-natural environments have also displayed restorative properties, such as museums (Kaplan et al., 1993) and places of worship (Herzog et al., 2010; Oullette et al., 2005).

Beyond the physical form of environments (i.e., built versus natural), attention restoration theory identifies four properties that are central to restorative experiences: Being away, extent, fascination, and compatibility. Being away is the experience of being transported away from routine activities. Extent is the experience of coherence and structure within the environment. Fascination, argued by some to be the most important element of restoration (Staats, van Gemerden, & Hartig, 2010), refers to presence of interesting or beautiful elements in the environment that effortlessly capture and hold attention. Finally, compatibility refers to the ability to be oneself and pursue personally important goals in the environment. To the extent that environments are perceived to have these properties they should also be restorative. In acknowledgement of this point, researchers working within this framework have created scales to measure individual differences in perceived restorativeness – most notably, the perceived restorativeness scale of Hartig and colleagues (Hartig et al., 1997). Work using this measure

confirms that natural environments, or environments with natural elements, are generally perceived as more restorative than environments that do not contain such elements (e.g., Berto, 2005; Hartig et al., 1997; Laumann et al., 2001; Purcell et al., 2001), but also that other environments, such as the aforementioned museums and places of worship, can be perceived as sites of restoration, at least for some (Kaplan et al., 1993).

Attention restoration theory mostly highlights how the physical properties of an environment (e.g., presence of natural elements) can contribute to positive psychological experiences among individuals within the environment. Relatively less theoretical attention has been given to the social properties of environments and to identifying which social features create restorative experiences. Particularly as one moves from nature to more socially defined spaces, such as museums and religious buildings, the role of social considerations – for example, the individual's group memberships and identities – in restorative experiences seems critical. Although these kinds of questions have been mostly overlooked by past research on restorative environments, some very recent work does provide answers. For example, Morton, van der Bles, and Haslam (2017) experimentally compared the effects of imagining oneself in natural versus urban spaces, with the effects of imagining oneself in spaces that were identity-consistent versus inconsistent. They found that identity-consistency (i.e., the degree of congruence between the individual's salient identity and the environment they were viewing) had a stronger positive effect on subsequent motivational and cognitive states than whether or not the imagined space was natural versus urban (see also Ysseldyk et al., 2016).

A similar idea has been put forward in a line of recent research on coping with environmental stressors, such as crowding and noise. Chronically noisy environments are well-understood in the environmental psychology literature to be sources of stress, impaired performance, and reduced overall well-being (e.g., Evans et al., 1995; Evans et al., 1998). Likewise, crowded environments, with a higher density of people and/ or more invasion of personal space, are understood to induce stress (Evans, 1984), to impair concentration and

undermine performance (Langer & Saegert, 1977), and to increase negative emotions and irritation (e.g., Evans & Wener, 2007). Yet a recent but growing body of research suggests that both noise and crowding are interpreted through the lens of identity (Alnabulsi & Drury, 2014; Shankar et al., 2013; Shayegh et al., 2017). For example, these researchers found evidence that one's social identity can moderate the perception of ambient noise in the environment (Shankar et. al, 2013), and that sounds produced by outgroup members are viewed as more intrusive and are more likely to result in feelings of anxiety and disempowerment than noise originating from the ingroup (Shayegh et. al, 2017). Similarly, higher social identification with the group represented by a crowd has been found to increase (rather than decrease) the individual's sense of safety within the crowd (Alnabulsi & Drury, 2014) and result in positive (rather than negative) emotional experiences of crowding (Novelli et al., 2013).

Together, these lines of work suggest that social factors, and more specifically those connected to social group membership and social identity, can determine how environmental stressors are appraised and coped with and therefore exactly which environments are likely to be experienced as restorative. In particular, a sense of identity with others in an environment can transform negative environmental properties into positive experiences. In accordance with this insight, the studies reported in this article examined how fit between the individual international student's identity-related goals (in the form of acculturation orientations) and the social groups typically associated with specific spaces (i.e., cultural majorities versus minorities) shaped their experiences of restoration in those spaces, and their performance on academically relevant tasks.

The present research

On the specific campus where this research was conducted, like many other campuses, physical spaces vary in their social meaning, for example via their connection to different student study majors (e.g., "the Business School", "the Institute for Arab and Islamic Studies").

Beyond this, there are also campus spaces that cater for specific subgroups in the student population. The most obvious example of this is the "INTO Building", which provides services and support for international students as they progress in their studies. Although this building is open to all, and includes its own cafeteria, it is frequented by students from minority ethnic backgrounds and is rarely used by majority British students. This building is situated at the centre of campus next to "The Forum", the main building that provides services and support to all students, and includes its own cafeteria and food outlets. Because this space is for all students, it is inevitably dominated by students from the British majority group. The results of an initial survey of British and international students confirmed that these spaces are associated with different groups. These buildings are part of the same era of campus development and as such share many architectural features (i.e., they are both modern buildings, with large windows and light, and that incorporate smooth natural shapes and wood elements into their design; refer to Appendix C for images). Accordingly, although each of these buildings is unique and serves multiple purposes, for the current studies we distinguish them primarily based on their status as being a "minority space" (INTO Building) versus a "majority space" (The Forum). In the research that follows, we experimentally compare international students' experiences and performance in each of these spaces.

There are, of course, many differences between the two spaces beyond their typical demographic, differences that fluctuate and change across the course of any given day. For example, The Forum is a larger space and is connected to other buildings, whereas INTO Building is more separate. The Forum also gets especially busy at peak times in the day, whereas INTO Building is relatively less busy throughout the day. These ambient features are things that could, plausibly, also impact on individual experiences and performance within the space, for example via crowding and noise. In later studies in this sequence we also made an attempt to measure and account for these characteristics and control for their possible influence on experiences and performance in the space.

Connecting this setting to predictions based on attention restoration theory, students should experience restoration most strongly in environments that are high in the properties of being away, fascination, extent, and compatibility (Felsten, 2009). But which spaces have these properties and to whom? All other things being equal, it seems plausible to assume that minority students would perceive minority space to be higher in these qualities than majority spaces, since the former are more compatible with their identity (i.e., following the logic of Morton et al., 2017; Ysseldyk et al., 2016; also see Schmader & Sedikides, 2018). Yet, international students are not a homogenous group, and therefore one might also expect individual differences to be relevant for further shaping their experiences of campus spaces (also see Kirby & Kaiser, 2020, and Kirby et al., 2020 on literature regarding individual differences). Variation in the degree to which international students orient towards their culture of origin and the host culture they find themselves in should also shape the social meaning, and therefore restorative potential, of different campus spaces.

The above literature review integrates social psychological studies of socially marked spaces (Cheryan et al., 2009), research on acculturation orientations and experiences among migrants and international students (Berry & Sabatier, 2011), theories from environmental psychology about the settings for restorative experiences (Hartiq et al., 1997; Kaplan, 1995; Kaplan & Kaplan, 1989), and that environment that is restorative might improve one's motivation and performance within the space (Langer & Saegert, 1977, Morton et al., 2016). We bring these ideas together in an attempt to understand international students' experiences and performances outcomes within distinct spaces on a modern British university campus. The predictions that guide this investigation are represented graphically in Figure 2, and are as follows:

1. International students higher on host orientation will perceive majority-spaces as more restorative, and will perform better in such spaces.

2. International students higher on home orientation will perceive minority-spaces as more restorative, and will perform better in such spaces.

3. The effect of any interactions between acculturation orientations and learning spaces on performance will be mediated through perceived restorativeness.
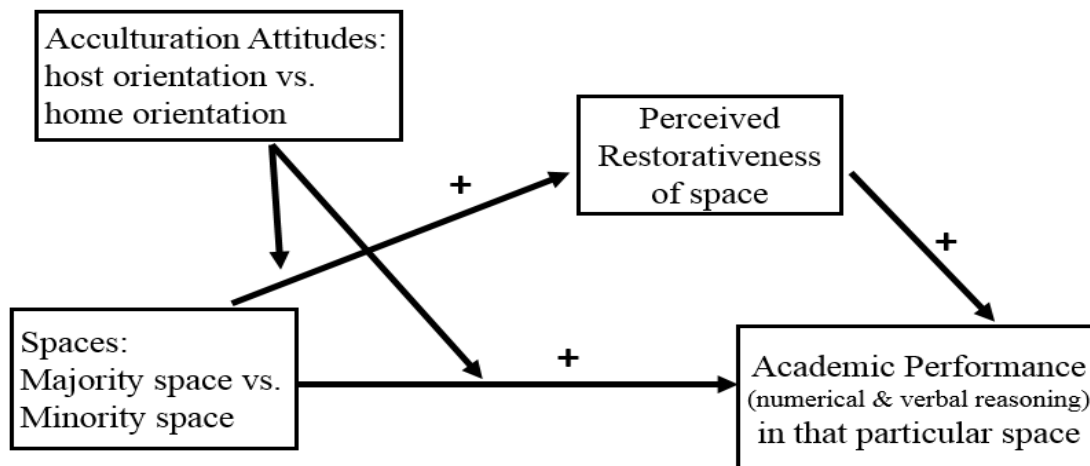

Figure 2. Conceptual model tested.

Meta-Analytic Approach

This chapter reports 3 studies that followed the same methodology to test the above hypotheses, but with additions and refinements to later studies in the sequence. To simplify the presentation of results, and to draw more robust conclusions, rather than reporting individual studies we conducted a meta-analysis across all three experiments to determine the overall, cumulative patterns of results. This approach is possible because the methods and key dependent measures were the same across studies; and it is advantageous because each of the individual studies had small sample sizes, in part due to the restricted pool of potential participants (i.e., international students constitute around 25% of the student body at the University of Exeter, Facts and figures, 2018/9). Our meta-analytic approach is consistent with current recommendations to conduct a mini meta-analysis when presenting multiple studies, particularly for underpowered samples (Goh et al., 2016). Following these recommendations,

we included all studies and dependent measures that tested our hypotheses, including those without statistically significant findings in individual studies.

Design

All studies involved one manipulated independent variable (campus space) and two measured independent variables (host orientation and home orientation). Conceptually, this maps onto a 2 (space: majority space vs. minority space) by 2 (host orientation: high vs. low) by 2 (home orientation: high vs. low) between-subjects experimental design. Following recommendations by Demes and Geeraert (2013)[2], rather than creating distinct categories of acculturation strategies, we retained the continuous measures of host and home orientation and explored how these measured variables interacted with the experimentally assigned space. For each of the studies, we recruited international students who were currently studying at the University of Exeter as research participants.

To ensure independence of our variables, acculturation orientations were assessed via an online survey before participants were invited to the study and randomly assigned to a campus space. Each study was conducted in a different academic year, and there was no overlap in study participants. The dependent variables measured for each study include: perceived restorativeness, numerical reasoning test, verbal reasoning test, perceived difficulty on numerical reasoning test, perceived difficulty on verbal reasoning test, and happiness (averaged across time) within space.

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[2] Demes and Geeraert strongly advocate against the more typical approach of categorising individuals into four distinct acculturation strategy groups. Instead, for both statistical and conceptual reasons, they suggest retaining host orientation and home orientation as independent measures, and testing their independent and interactive effects on acculturative outcomes – an approach we also take in the current research.

Justification of sample size

With 80% power and an alpha of .05: (a) 128 observations are needed to detect a medium effect (partial eta squared, $\eta_p^2 = .06$), and (b) 779 observations are needed to detect a small effect (partial eta squared, $\eta_p^2 = .01$). The MSc. Study in this sequence ($n = 114$) revealed interactive effects of space and acculturation orientations that varied across dependent variables with partial eta squared ranging between .01 to .06. This suggested the need for relatively high sample size. However, practicality was also a consideration in this research, given the intensive individual testing and of participants from an underrepresented group on campus. For this reason, our subsequent studies aimed for a practical sample size that was at least larger than the MSc. Study but also achievable within one academic term. Hence, our goal was to collect as many participants as possible in an academic term, but ideally at least 250 observations for each subsequent study. We were able to meet this target in Study 2 ($n = 260$) and came close to meeting it in Study 3 ($n = 244$). We only conducted data analyses after all data were collected. Study 3 was pre-registered.

Details of the pre-registration can be found here:

http://web.archive.org/web/20201016103446/https://aspredicted.org/2mi2d.pdf

Participants

Pooling across the three experiments, 618 University of Exeter students completed both parts of the study: an online survey assessing acculturation orientations (administered via Qualtrics survey software), and an in-person testing session. See Table 5 for participant demographic details for each study.

Table 5. Demographic characteristics across three field experiments.

Characteristics	MSc. Study	Study 2	Study 3
Total (N)	114	260	244
Age in years			
Mean	21.36	22.44	22.36

SD	3.8	3.57	4.54
Gender			
Male	38	88	78
Female	76	172	165
Other	-	-	1
Ethnic background			
Black	3	4	4
Chinese	52	133	124
Hispanic	2	2	3
Indian	9	29	12
Japanese	5	5	4
Multiracial	2	5	8
Other	14	34	33
White	27	48	56
Level of Programme			
Undergraduate	81	127	132
Postgraduate	33	133	112

Procedure and measures

The procedure and measures were the same across all studies, with the exception that later studies included additional measures. This section describes the common methods across studies, with additional measures detailed in the supplementary analyses (refer to Appendix C).

To recruit participants, advertisements were cascaded through various international student networks at the university, as well as on the research participation website for psychology students. Interested international students were invited to follow a link to get more information about the study and to take part. Upon following the link, participants were first told that the study contained two parts. The first part was an online survey that was interested in their attitudes and experiences as international students studying in this university, something that would take less than 10 minutes. They were told that there was also a second part which involved scheduling an appointment with the researcher to meet "inside the university and to do some tests together", something that would take approximately 45 minutes. Participants were informed that on completion of both parts of the study, they would receive either £5 payment or course credits (if they were psychology students) in return for their time.

Ethical approval for each study was granted by the departmental ethics committee, and was obtained prior to data collection.

Part 1: Online survey. The online survey contained a measure of acculturation orientations taken from Ramos and colleagues (2016). This measure asks respondents the degree to which they disagree or agree with various statements concerning their desires to (1) participate in the British culture and community (8 items; e.g., "I like British culture and I will do my best to be part of it"), and (2) engage with their own culture and community (9 items; e.g., "I would like to have more friends from my own nationality"). Responses were given on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). Items were averaged to create indices of host orientation (i.e., desires to connect with British culture) and home orientation (i.e., desires to maintain contact with the culture of origin). The scales showed adequate reliability with Cronbach alphas ranging from .66 to .69 for host orientation and .71 to .73 for home orientation.

Next, participants provided demographic details, such as age, gender, ethnicity, nationality, as well as information about their stay in the country, including whether this was their first visit to UK and how long they had been in the UK. After this, participants generated their unique anonymous code. At the end of the survey, they could follow a separate link if they were willing to continue with the second part of the study and to provide their email address for scheduling.

Part 2: In-person testing. Each participant was randomly assigned via a coin toss to take the test in one of two learning spaces on campus: The Forum or INTO Building. Participants met the experimenter at a single neutral spot at the centre of campus, equidistant to each of the experimental spaces. This common meeting place was chosen to avoid activating expectancies about the experimental spaces before participants arrived in them, and to ensure a common starting point for all participants irrespective of condition. On meeting, the participant was

taken by one of two experimenters (one Asian male, one Asian female) to the randomly assigned learning space.

Once seated at the learning space, the participants signed the informed consent form, and were given brief instructions regarding the numerical and verbal reasoning tests that would follow. Participants were informed that a calculator was provided to help with the numerical reasoning questions. They were also given the option to use their smartphones or the internet to check any vocabulary as needed. There were no time constraints for the tests, and participants could ask questions to clarify their understanding of the task. Once the participants understood the brief instructions, they filled in their code generated at the end of the online survey, which enabled the matching of their responses to the online survey completed in the first part.

Before taking the test, participants were first asked to name the location that they were in, and to take a moment to observe their surroundings. Afterwards, they filled in the Perceived Restorativeness Scale (14 items; adapted from Hartig et. al., 1997). This scale measures individual appraisals of the four dimensions identified in prior theory as being important for "restorative" experiences: (1) Being away; e.g., "Being in this space gives me a break from my day to day routine"; (2) Fascination; e.g., "My attention is drawn to many interesting things in this space"; (3) Coherence; e.g., "There is a great deal of distraction in this space [reverse scored]; and (4) Compatibility; e.g., "I have a sense that I belong here". Participants gave their responses to each of these items on a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Across studies, the Cronbach alphas of the subscales ranged from .60 to .80. Ultimately, because theory suggests that it is the combination of all features that creates restorative experiences, we collapsed across subscales to create a single, reliable, index. The reliabilities of the full scale ranged from .73 to .84.

After reflecting on their surroundings, participants completed the 12-item Scale of Positive and Negative Experience (SPANE) by Diener and colleagues (2010) and two further

items from the Emotional Well-Being Scale by Diener and Biswas-Diener (2008). Together, these 14 items assessed participants' experiences of 7 positive emotions: "contented", "good", "happy", "interested", "joyful", "pleasant" and "positive"; and 7 negative emotions: "afraid", "angry", "bad", "negative", "unpleasant", "sad" and "stressed" in that moment. Participants gave their responses on a 5-point scale, ranging from 1 (not at all) to 5 (very much). In accordance with the standard protocols of this measure, a happiness balance measure was created by subtracting the unpleasant emotions score from the pleasant emotions score. The Cronbach alpha coefficients ranged from .88 to .89. This measure was taken again after participants completed the academic tests, described below.

After the self-report measures, participants completed a measure of academic performance based on 7 numerical reasoning questions and 7 verbal reasoning questions. These questions were adapted from the kinds of tests that university students might take in recruitment activities for employers and that are available via job test preparation websites in the UK (Job Test Prep, 2016). Participants were told that these tests were commonly used by employers to test abilities across different domains, and that they should try to do their best. All questions were in English with 5 multiple choice answers, including 4 possible answers and one 'cannot say' option. A pilot study ($n = 13$, age ranged 18 to 25, all international status) confirmed that these 14 academic questions yielded variability in terms of scoring (6 to 13 corrects) and could be completed within a reasonable time (average time of completion as 20.42 minutes).

Following each section of the test (i.e., numerical and verbal), participants were asked to rate the experienced difficulty of the test items: "How hard did you find the test?"; "How easy or difficult was it for you to understand the language in the questions?" and; "How well do you think you did on this section of the test?". Responses were given on appropriately worded 5-point scales, from 1 (extremely easy) to 5 (slightly difficult) for the first two items, and 1 (extremely well) to 5 (not well at all) for the third item. These items were averaged and then labelled as perceived difficulty on numerical reasoning test and perceived difficulty on verbal

reasoning test. Across studies, the Cronbach alpha coefficients ranged from .57 to .69 for perceived difficulty on numerical reasoning test; and ranged from .78 to .84 for perceived difficulty on verbal reasoning test.

Finally, participants completed the second SPANE measure. Additional measures were taken in each of two latter studies to better account for the physical features of the environments that might affect restorative experiences (including a measure of ambient noise). The effects of these measures are described in the supplementary analyses (refer to Appendix C). After completing the tests and answering the questions, participants were thanked, debriefed and compensated for their time.

Results

Preliminary analyses

Preliminary analyses of all data showed no serious issues with assumptions of normality, assumptions of homogeneity of variance, or multicollinearity. Correlations were also explored between demographic indicators (age, gender, ethnicity, religion, actively practising religion, level of programme, first visit to UK, relationship status, types of accommodation, and active participation in sports or societies) and the independent and dependent variables. This did not reveal any potentially confounding demographic factors. In studies with multiple experimenters, we also checked whether the experimenters had any effect, but none were found.

Before we meta-analyzed the results of the three studies (total $N = 618$), we conducted analyses within each of the studies separately. In each data set, the two acculturation orientations (i.e., host orientation and home orientation) were weakly to moderately negatively correlated: MSc. Study, $r(114) = -.108$, $p = .253$; Study 2, $r(260) = -.237$, $p < .001$; Study 3, $r(244) = -.111$, $p = .084$. Thus although participants who are higher on home orientation tend to be lower on host orientation, and vice versa, conceptually and empirically these are distinct orientations (Demes & Geeraert, 2013). These analyses therefore tested the independent and

interactive effects of Space, Host Orientation, Home Orientation on each of the dependent measures (i.e., perceived restorativenes on study space, numerical reasoning test, verbal reasoning test, perceived difficulty for numerical and verbal reasoning test, and average happiness within study space,). A summary of these within-study analyses can be found in Table 6.

Table 6. Summary of within-study analyses (three field experiments).

	MSc. Study ($n = 114$)			Study 2 ($n = 260$)			Study 3 ($n = 244$)		
	F	p	η_p^2	F	p	η_p^2	F	p	η_p^2
Perceived Restorativeness									
Space	0.23	.633	.002	6.80	.010	.026	1.03	.312	.004
Host Orientation	3.17	.078	.029	7.82	.006	.030	8.50	.004	.035
Home Orientation	1.36	.246	.013	3.22	.074	.013	3.12	.078	.013
Host x Home	0.34	.560	.003	0.01	.918	.000	1.04	.308	.004
Space x Home	0.28	.599	.003	0.52	.474	.002	6.10	.014	.025
Space x Host	13.32	.000	.112	0.17	.679	.001	6.03	.015	.025
Space x Host x Home	2.72	.102	.025	2.60	.108	.010	0.56	.454	.002
Numerical Reasoning Test									
Space	0.23	.630	.002	0.93	.335	.004	2.47	.117	.010
Host Orientation	0.97	.326	.009	7.36	.007	.028	0.71	.400	.003
Home Orientation	0.34	.560	.003	1.52	.219	.006	0.37	.546	.002
Host x Home	1.52	.221	.014	0.88	.350	.003	0.14	.704	.001
Space x Home	0.93	.338	.009	4.81	.029	.019	0.43	.511	.002
Space x Host	0.39	.535	.004	1.37	.243	.005	3.84	.051	.016
Space x Host x Home	0.11	.741	.001	0.88	.348	.003	0.46	.500	.002
Verbal Reasoning Test									
Space	1.80	.183	.017	0.50	.480	.002	1.20	.275	.005
Host Orientation	2.11	.149	.020	0.87	.353	.003	2.45	.119	.010
Home Orientation	0.23	.633	.003	0.02	.899	.000	1.86	.174	.008
Host x Home	3.12	.080	.029	3.27	.072	.013	0.00	.991	.000
Space x Home	6.27	.014	.056	3.08	.080	.012	2.28	.133	.010
Space x Host	0.02	.897	.000	0.03	.858	.000	0.39	.531	.002
Space x Host x Home	1.14	.289	.011	0.41	.524	.002	0.00	.990	.000
Perceived Difficulty on Numerical Reasoning Test									
Space	0.07	.788	.001	0.75	.389	.003	0.001	.978	.000
Host Orientation	0.65	.421	.006	1.21	.273	.005	0.29	.593	.001
Home Orientation	0.04	.845	.000	0.02	.895	.000	0.55	.457	.002
Host x Home	0.17	.686	.002	0.06	.810	.000	0.24	.623	.001
Space x Home	3.47	.065	.032	2.86	.092	.011	0.13	.724	.001
Space x Host	1.01	.318	.009	0.26	.614	.001	0.83	.362	.004
Space x Host x Home	1.24	.268	.012	0.09	.768	.000	3.11	.079	.013
Perceived Difficulty on Verbal Reasoning Test									
Space	0.25	.616	.002	1.56	.213	.006	0.02	.903	.000
Host Orientation	3.64	.059	.033	4.15	.043	.016	5.31	.022	.022
Home Orientation	0.20	.654	.002	3.60	.059	.014	2.46	.118	.010
Host x Home	0.02	.894	.000	0.01	.944	.000	0.36	.547	.002
Space x Home	4.32	.040	.039	2.75	.099	.011	2.97	.086	.012
Space x Host	2.81	.097	.026	6.39	.012	.025	0.46	.500	.002
Space x Host x Home	0.38	.541	.004	0.68	.412	.003	3.58	.060	.015
Happiness (averaged across time) within space									

Space	0.17	.685	.002	0.02	.877	.000	0.55	.460	.002
Host Orientation	18.35	.000	.148	8.01	.005	.031	12.15	.001	.049
Home Orientation	0.99	.323	.009	0.03	.854	.000	0.14	.705	.001
Host x Home	1.72	.192	.016	0.27	.603	.001	0.05	.818	.000
Space x Home	4.75	.032	.043	0.09	.770	.000	0.17	.677	.001
Space x Host	0.03	.865	.000	0.15	.699	.001	0.21	.651	.001
Space x Host x Home	0.35	.554	.003	1.02	.314	.004	4.39	.037	.018

Note: *p <.05, **p <.01, ***p <.001

Internal meta-analyses

Irrespective of whether the interaction terms were statistically significant or not, we probed the relationships between acculturation orientations and dependent measures as a function of experimentally assigned space via PROCESS (Hayes, 2013). This allowed us to generate parameter estimates to meta-analyse the relationship between home or host orientation (controlling for the other orientation) and the six dependent measures separated by campus spaces (majority vs minority space). The unstandardized regression coefficients from these analyses were then converted to Cohen's *d* using an online effect size calculator by Wilson (2010a). The inverse variance weight for each *d* value were obtained through the same calculator. Following that, we ran categorical moderation analyses using the MetaF.sps SPSS macro developed by Wilson (2010b), in which we tested the effects of campus spaces as fixed effects. In these analyses, we reported Q_B, which tests whether there is a significant amount of heterogeneity that can be attributed to differences between the campus spaces. Following that, we ran further analyses to estimate the overall mean weighted effect sizes of each condition according to levels of each acculturation orientation (low vs high).

Effects of home orientation on experiences of space

Our first meta-analysis compared the aggregated relationships between home orientation and outcomes as a function of space. Consistent with hypothesis 2, these analyses revealed an overall relationship between home orientation and the perceived restorativeness of space, as well as a weak relationship between home orientation and the perceived difficulty of

the verbal reasoning test (see Table 7). Yet, both these effects depended on space condition. As can be seen in Table 8, across studies, home orientation was associated with greater perceived restorativeness in the minority space. In the majority space, there was no relationship between home orientation and perceived restorativeness (patterns summarised in Figure 3). At the same time, across studies, home orientation was also associated with greater perceived difficulty of the verbal test in the minority space, but in the majority space this relationship was absent (patterns summarised in Figure 4).

Table 7. Q_B and d (effects of home orientation) on primary dependent variables.

DV	Q_B (p)	Mean d (p)	95% CI
Restorativeness	4.56 (.033)	0.16 (.004)	0.05 to 0.28
Numerical Test	0.01 (.909)	0.05 (.362)	-0.06 to 0.16
Verbal Test	0.61 (.435)	-0.08 (.153)	-0.19 to 0.03
Numerical Difficulty	0.08 (.774)	-0.03 (.554)	-0.15 to 0.08
Verbal Difficulty	4.97 (.026)	0.10 (.074)	-0.01 to 0.21
Happiness	0.90 (.342)	0.01 (.930)	-0.11 to 0.12

Note. Q is the homogeneity analysis. Q_B (Q between) tests for differences across subgroups. Mean d is Cohen's d.

Table 8. Simple slope effects of home orientation on primary dependent variables within each space (majority and minority)

| DV	Space	Mean d	p	95% CI
Restorativeness	Majority	0.04	.590	-0.11 to 0.2
	Minority	0.29	.0004	0.13 to 0.45
Numerical Test	Majority	0.05	.573	-0.11 to 0.2
	Minority	0.06	.469	-0.1 to 0.22
Verbal Test	Majority	-0.13	.118	-0.28 to 0.03
	Minority	-0.04	.645	-0.2 to 0.12
Numerical Difficulty	Majority	-0.02	.830	-0.18 to 0.14
	Minority	-0.05	.534	-0.21 to 0.11
Verbal Difficulty	Majority	-0.02	.758	-0.18 to 0.13
	Minority	0.23	.005	0.07 to 0.39
Happiness	Majority	0.06	.465	-0.1 to 0.22
	Minority	-0.05	.540	-0.21 to 0.11
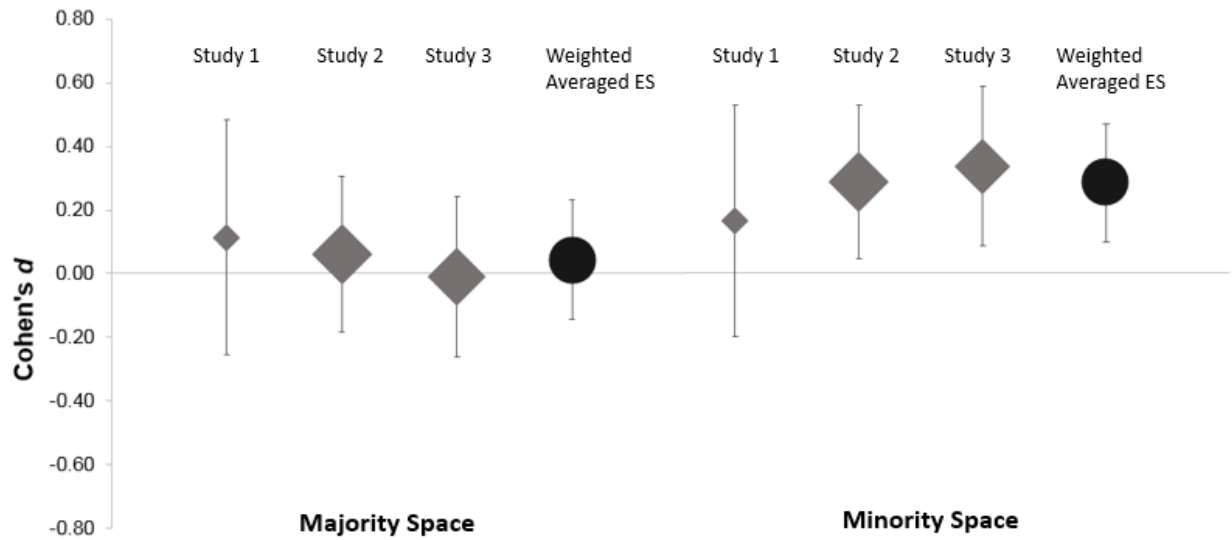
Figure 3: Forest plots showing effects of home orientation on perceived restorativeness of space among international students separated by majority and minority spaces.
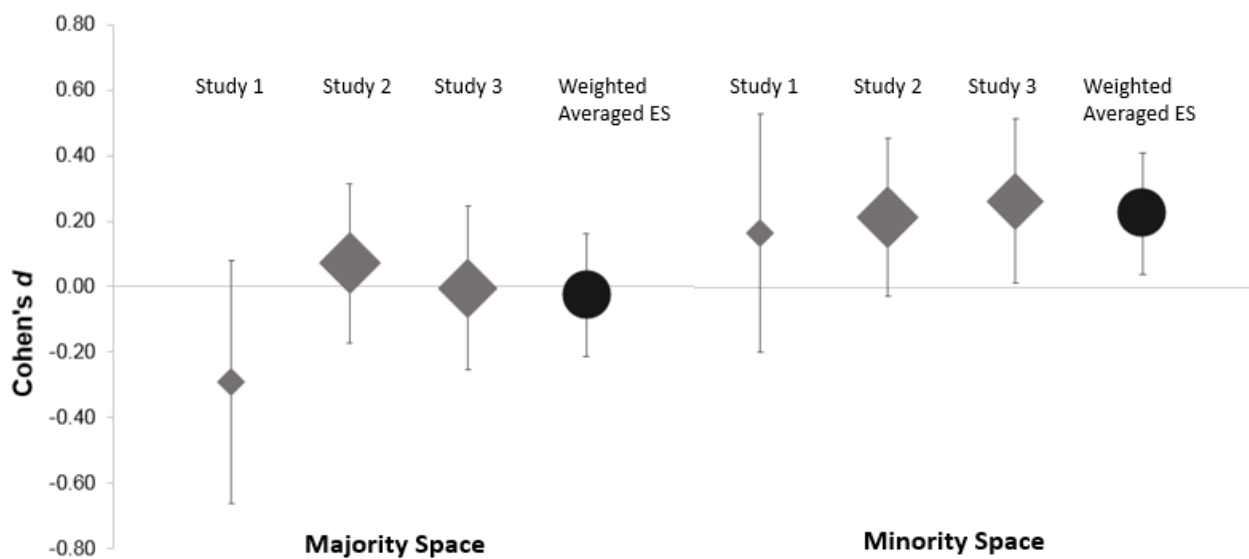

Figure 4: Forest plots showing effects of home orientation on perceived difficulty on verbal reasoning test among international students separated by majority and minority spaces.

To probe these patterns further, we ran two additional meta-analyses to examine the effect of space among those lower and higher in home orientation (i.e., -/+ 1 SD). As can be seen in Table 9, among those higher in home orientation, the minority space was perceived as

more restorative than the majority space. At lower levels of home orientation, there was no difference between spaces in perceptions of restorativeness. Counter to hypothesis 2, among those higher in home orientation, the verbal reasoning test was perceived as more difficult when taken in the minority than majority space, whereas among those lower in home orientation, the verbal reasoning test was perceived as more difficult in the majority than minority space. Again, this effect of space on the experiences of those higher and lower in home orientation was limited to perceptions of restorativeness[3] and perceived difficulty on verbal reasoning test, and did not extend to the other dependent variables[4].

Table 9. Simple effects of space (minority versus majority) at different levels of home orientation (low vs high) on primary dependent variables.

Measure	Mean d	p	95% *CI*
Low home orientation			
Restorativeness	-0.02	.841	-0.17 to 0.14
Numerical Test	0.05	.527	-0.11 to 0.21
Verbal Test	-0.08	.340	-0.24 to 0.08
Numerical Difficulty	0.04	.591	-0.12 to 0.2
Verbal Difficulty	-0.18	.026	-0.34 to -0.02
Happiness	0.12	.131	-0.04 to 0.28
High home orientation			
Restorativeness	0.33	.0001	0.17 to 0.48
Numerical Test	0.06	.469	-0.1 to 0.22
Verbal Test	0.05	.571	-0.11 to 0.21
Numerical Difficulty	0.001	.993	-0.16 to 0.16
Verbal Difficulty	0.28	.001	0.12 to 0.44
Happiness	-0.03	.696	-0.19 to 0.13

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[3] The primary analyses focus on the composite measure of perceived restorativeness. However, follow-up analyses were repeated on each of the sub-components. The overall pattern observed on the composite measure was evident on each of the sub-components: home orientation was significantly correlated with perceptions of being away, fascination, coherence and compatibility in the minority space, but not in the majority space. However, this interaction was statistically significant only for the sub-component of coherence ($p = .006$).

[4] Similar meta-analytic effects were observed when ambient noise controlled for in the analyses of Study 2 and Study 3.

Effects of host orientation on experiences of space

Next, we repeated the meta-analysis to compare aggregated relationships between host orientation and outcomes as a function of space. As can be seen in Tables 10 and 11 below, across studies, there was no evidence of interactions between host orientation and space on any of the dependent variables. Instead, host orientation was associated with greater perceived restorativeness, better verbal test performance and reduced perceived difficulty of this, and greater happiness across spaces.

Table 10. Q_B and d (effects of host orientation) on primary dependent variables.

DV	Q_B (p)	Mean d (p)	95% CI
Restorativeness	0.24 (.626)	0.25 (.0000)	0.15 to 0.37
Numerical	2.54 (.111)	0.08 (.144)	-0.03 to 0.2
Verbal	0.23 (.631)	0.12 (.032)	0.01 to 0.23
Numerical Difficulty	0.94 (.334)	-0.03 (.602)	-0.14 to 0.08
Verbal Difficulty	2.27 (.132)	-0.2 (.0004)	-0.32 to 0.09
Happiness	0.31 (.579)	0.32 (.0000)	0.21 to 0.43

Note. Q is the homogeneity analysis. Q_B (Q between) tests for differences across subgroups. Mean d is Cohen's d.

Table 11. Simple slope effects of host orientation within each space (majority and minority) on primary dependent variables.

DV	Space	Mean d	p	95% CI
Restorativeness	Majority	0.28	.001	0.12 to 0.44
	Minority	0.23	.005	0.07 to 0.39
Numerical Test	Majority	-0.01	.926	-0.17 to 0.15
	Minority	0.17	.031	0.02 to 0.33
Verbal Test	Majority	0.15	.063	-0.01 to 0.31
	Minority	0.1	.238	-0.06 to 0.25
Numerical Difficulty	Majority	0.03	.753	-0.13 to 0.18
	Minority	-0.08	.292	-0.24 to 0.07
Verbal Difficulty	Majority	-0.29	.0003	-0.45 to -0.13
	Minority	-0.12	.144	-0.28 to 0.04
Happiness	Majority	0.35	.0000	0.19 to 0.51
	Minority	0.29	.0004	0.13 to 0.45

General Discussion

The research reported in this paper was designed to test the prediction that congruence between the self and the social properties of one's environment would enhance restorative experiences in that space. To test this prediction, we combined three field experiments (618 international students total) in which international students were randomly assigned to complete assessments in two socially-distinct campus spaces, one a 'minority space' (i.e., typically dominated by non-British students) and one a 'majority space' (i.e., typically dominated by British students). We tested the impact of being in each space on international students' experiences of restorativeness, as well as their academic performances within that space.

To address variation in individual selves, we assessed acculturation orientations prior to space experience. Acculturation orientations were expected to determine which spaces became sources of restoration versus distraction to the individual. Specifically, we predicted that international students who were higher in host orientation would perceive the majority space as more restorative, and would therefore perform better in this space, whereas international students higher in home orientation would experience the minority space as more restorative and would therefore perform better in that space. To the extent that there was any interaction between acculturation orientation and learning spaces on performance, we further expected this to be mediated through perceived restorativeness because restorative spaces should benefit individual performance.

We found some evidence in support of these predictions, but this evidence was limited to the interactive effect of home orientation and space on perceived restoration. Internal meta-analysis revealed that across studies, those higher in home orientation indeed experienced the minority space as more restorative than those lower in home orientation, and those higher in home orientation also experienced this space as more restorative than majority space. Contrary to initial expectations, those higher in host orientation did not experience specific benefits from

being in a 'majority space', and instead perceived both spaces as more restorative than those lower in host orientation.

With respect to performance outcomes, there was also some evidence of an interaction between home orientation and space. But this evidence was limited to the perceived difficulty of the verbal reasoning test (rather than test performance itself). In the absence of corresponding performance outcomes, the overall pattern is somewhat moot with respect to our predictions: participants higher (versus lower) in home orientation perceived the verbal reasoning test as more difficult when it was taken in the minority (versus majority) space. Contrary to our original expectation, there was no cumulative evidence that participants actually performed better in spaces that matched their acculturation orientation (i.e., minority spaces for those high in home orientation, majority spaces for those high in host orientation). Thus, restorative experiences of space do not seem to be straightforwardly linked to performance outcomes, at least as these were assessed in the current studies. Because there were no effects on performance outcomes, there was also no evidence that perceived restorativeness mediated performance outcomes. At least across the studies reported here, it seems that the consequences of being in identity-congruent spaces is limited to self-reported expressions of restoration. In the section below, we consider the theoretical implications of this pattern of findings.

Implications

The observed pattern of effects on perceived restorativeness is consistent with previous research in the field, which has shown that the psychological benefits of environments are enhanced when those environments are stereotypically "owned" by their social group. For example, athletes perform better when they compete on home territory rather than away (Allen & Jones, 2014), believers experience heightened well-being in the presence of religious buildings (Ysseldyk et al., 2016), and exposure to natural environments enhances motivation

and cognition especially when the nature depicted matches the perceiver's social identity (Morton et al., 2017; see also Knight & Haslam, 2010). Here too, minority spaces are experienced as especially restorative among international students whose identity is oriented towards their minority culture. In the context of the broader literature on restorative environments, these patterns point to the often-overlooked importance of social parameters in structuring restorative experiences, in addition to the more widely researched physical environmental parameters (e.g., noise, crowding, and the presence of natural elements).

The present work also extends the above research on the restorative effects of identity-consistent spaces by acknowledging the importance of individual differences. Although prior work shows that ethnic minorities on university campuses (e.g., Kirby et al., 2020), and women in male dominated fields (Cheryan et al., 2009, 2011), benefit from the provision of spaces that signal inclusion of their group, not all minorities have the same identity-based goals. Particularly with respect to international students on campus, some may be very motivated to engage with the host (i.e., majority) culture, whereas others may be more motivated by preserving their culture of origin. Our research shows that these individual differences shape minority individuals' experiences of space: Individuals oriented towards their minority culture seem to experience minority dominated spaces positively, whereas individuals oriented towards the dominant culture experiences all spaces more positively, regardless to which group these spaces are attached. Having observed these patterns, we suggest that individual differences should be more strongly considered in future research on the experience of socially-marked spaces.

Although work on restorative experiences tended to focus more on the physical than social features of environments, perceived compatibility is one of the theorised dimensions of restorative experiences. As it is measured in the perceived restorativeness scale, compatibility could refer to various aspects of the social self – for example, who one is as an individual (e.g., "being here suits my personality") and what one wants to do (e.g., "I can do things I like in this

space"), but also inclusion within the broader groups and communities connected to the environment in question (e.g., "I have a sense that I belong here"). More social psychologically oriented research has tended to focus on the latter, and has found that a feeling of belonging in academic spaces has important motivational consequences for individual students, especially those from minority backgrounds (e.g., Cheryan et al., 2009, 2011; Kirby et al., 2020). Although the findings of the present research align with this work, one could argue that observing effects of identity compatibility on perceived restorativeness reflects only the self-conscious recognition that the individual does belong to the group that is exemplified by the space they are in (i.e., that minority students recognise that they are in a minority space and therefore "belong" there). Speaking against a narrower interpretation of our findings, the interaction between home orientation and space was observed across all sub-dimensions of perceived restorativeness, and was especially pronounced on coherence – that is, the individual assessment of whether or not the space was confusing and distracting. On this basis, it seems likely that perceived restorativeness captures something more than a simple recognition of the match between one's self and the social properties of the environment one is in. Instead, this match seems to create a foundation for more generally restorative experiences of space.

To the extent that one assumes, in line with attention restoration theory, that the measure of perceived restorativeness does capture dimensions that are relevant for restorative experiences, then perceived restorativeness should predict actual restoration, for example in the form of better individual performance in environments that are rated by that individual to be higher in restoration. Surprisingly, very few studies have investigated the link between perceived and actual restoration. Nonetheless, there are studies showing that environment that are rated as higher in perceived restorativeness are also those in which individuals perform better on tests of attentional capacity (e.g., Amicone et al., 2018). Against that backdrop, it is, perhaps, surprising – and certainly was contrary to our hypotheses – that the interactive pattern on perceived restorativeness was not replicated on indicators of actual performance within the

space. We did observe that participants higher in home orientation experienced the verbal reasoning test as more difficult when the test was taken in the minority (versus majority) environment, but again this does not seem immediately consistent with our expectations.

One reason for the lack of effects on actual performance may be to do with the kinds of test we used. In designing the studies, we decided to use tests that students might encounter in the test setting – specifically we used numerical and verbal reasoning tasks that are often part of employers graduate recruitment tests. Although these are relevant to the study population, in retrospect these tests are perhaps too broad to capture outcomes specified by attention restoration theory. More typically, researchers in this area use tests that capture cognitive capacity, working memory, or attentional focus, such as the backward digit span task (e.g., Berman et al, 2012; Kuo, 2001; Ottosson & Grahn, 2005) or sustained attention to response task (SART; Berto, 2005). Thus, more precise measures might have been better suited to detect any consequences of restorative experiences for actual performance.

This does not explain the observed pattern on perceived test difficulty, which in some ways could also run counter to predictions. If participants are experiencing restoration, and have enhanced cognitive capacity and mental focus, surely subsequent tests should be experienced as easier rather than more difficult. Given its unexpected nature, we would not want to over-interpret this effect without further replication. However, it is plausible that perceived test difficulty captures an element of motivation and/ or effort: tests that we find harder are also the ones for which we try harder. Alternatively, people who are in a restorative state, and therefore engaging involuntary attention, may experience the switch to voluntary, direct attention as more difficult. We cannot know and as such, the meaning of the pattern on this dependent variable remains ambiguous.

A final pattern that is worth highlighting is that the predicted effects on perceived restorativeness emerged for the match between home orientations and minority space, but not on the match between host orientation and majority space. Although not predicted, this pattern

is consistent with the idea that inclusive spaces are especially important for minority individuals (e.g., Chaney & Sanchez, 2018; Kirby et al., 2020), and that minority individuals are more sensitive to cues of belonging in academic environments (Walton & Cohen, 2007). Research on international students has shown that the lack of English fluency can result in higher acculturative stress (Nasirudeen et al., 2014; Yeh & Inose, 2003), tendencies to self-segregate away from the host students on campus, and to form culturally familiar groups as a coping strategy (Bamford & Pollard, 2018; Rose-Redwood & Rose-Redwood, 2013). Along these lines, it could be that minority campus spaces meet these needs among international students, especially those who are higher on home orientation and perhaps more inclined to experience acculturative stress, and that this is part of the reason that being in these spaces is experienced as restorative. International students who are more engaged with the host culture (e.g., higher on host orientation) may experience these identity-based needs less strongly and therefore be less affected by the properties of the physical and social spaces they are in – especially since ultimately all spaces are on a campus that is part of the host culture. More research could be done to further explore whether it is indeed the case that segregated spaces on campus have more meaning to minority than majority individuals, and to minority individuals who are more oriented to their culture of origin than to the host culture. We hope that the present research will prompt further inquiry along these lines.

Limitations and directions for future research

Our studies were intended to test how variation in the social meaning of campus space, not just their physical properties, might affect restorative experiences. However, it is important to note that given the field experiment nature of the research we could not properly disentangle the social and physical properties of space. Inevitably physical environmental parameters – such as noise and crowding – varied across locations, and across individual testing sessions, in ways that would have affected individual experiences of restoration. Potentially, those physical

features might have amplified the socially-marked nature of the spaces, for example when the environment was heavily populated by minority individuals making noise by speaking in non-dominant languages. Alternatively, those physical features might have been sources of distraction that undermined individual experiences independent of other sources of restoration. Although we made some attempt to control for these influences in later studies in the sequence, future research could explore more systematically the interplay between social and physical environmental features and what these together mean for restorative experiences.

An additional limitation to the current research is that although we used meta-analysis to maximise the power to test relationships of interest, each of our individual studies remained relatively small. This limited the capacity to test more complex interactions between variables, for example by comparing students according to the four distinct categories of acculturation strategy that are created by the combination of host and home acculturation orientations. Although some researchers in the field advise against the creation of discrete categories (e.g., Demes & Geeraert, 2013), additional power would at least allow for proper tests of higher order interactions among measured acculturation orientations and campus spaces and thereby to isolate the effects of host and home orientations.

Next, acculturation preferences among international students could be confounded with other parameters such as English language competence (i.e., the language used by the host community). Research has shown that the lack of English fluency can result in higher acculturative stress among international students (Nasirudeen et al., 2014; Yeh & Inose, 2003). This might result in international students having the tendency to self-segregate away from the host students on campus, and to form culturally familiar groups as a coping strategy (Bamford & Pollard, 2018; Rose-Redwood & Rose-Redwood, 2013). The limitation of the studies in this chapter is that we did not measure participants' English language competency (e.g., IELTS results). Hence, future studies should take into account international students' English language competency when analyzing the data.

Similarly, although we chose spaces for our field experiment that maximised the difference between majority and minority spaces, there are many more spaces on campus that relate to the identities of international, and other students. It would be interesting to explore variation in the experience of multiple campus spaces and how this experience is shaped by individual differences, social cues in the space, as well as physical environmental stimuli. Future research could build on the evidence we have provided here to conduct these more complete tests of restorative experiences on university campuses.

Conclusion

Individual differences in acculturation orientation undoubtedly shape the experiences of international students on campus. These individual differences might also shape international students' experiences of campus spaces, and the degree to which these become sources of restoration. Consistent with prior research on the psychological benefits of being in self- and identity-congruent spaces, we find that consistency between individual student's culturally-defined sense of self and the spaces they are in creates restorative experiences. Consequently, international students whose self is more strongly oriented towards their minority culture experience learning spaces that are dominated by other minority students more positively than learning spaces dominated by the majority. Contrary to expectations, we did not find that these restorative experiences of campus learning spaces translated into better academic performance within them. Further research should establish whether or not the effects of being in identity-compatible spaces extends beyond felt restoration. Nonetheless, the findings reported here further highlight how the social properties of space have psychological consequences for those who inhabit them.

Chapter 4

Felt Belonging and Comfort in Different Campus Spaces

Abstract

This chapter consists of a cross-sectional survey (Study 4: $n = 294$) and longitudinal survey (Study 5: $n = 174$) which explored the campus spaces that international students freely use in relation to their acculturation orientations. Both studies examined how different patterns of space use might contribute to feelings of belonging to the university (i.e., identification) and well-being (i.e., personal self-esteem, resilience, and satisfaction with life). Study 4 revealed a similar pattern to the experimental studies in Chapter 3. Feelings of comfort within specific spontaneously-used spaces again reflected a pattern of identity compatibility: Host oriented international students reported experiencing more comfort in majority-owned spaces, whereas home oriented international students reported experiencing more comfort in minority-owned spaces. Following up on Study 4, Study 5 revealed that international students high on home orientation and low on host orientation felt more comfortable in campus spaces that contained a higher proportion of international students. These studies reveal the role of acculturation orientations regarding international students' felt belonging and comfort in different campus spaces.

Introduction

The globalization of educational markets has resulted in countries like the United States, United Kingdom, China and Canada hosting significant numbers of international students. According to the Higher Education Statistics Agency (UK), 485,645 international students were studying in the UK for academic year 2018/2019 (Universities UK, 2020). Contributing to this number are a variety of organisations that partner with UK universities, promote UK universities internationally and provide bridging courses (e.g., English academic writing course) to help international students adapt to the academic culture and norms in the UK universities (e.g., INTO University Partnerships, 2021). One thing that has been found to both help and hinder the adaptation of international students to their new environment are the interactions they have with others on campus. For example, a systematic review concluded that successful interactions between international students and domestic students, faculty, and other international students, increases international students' sense of belonging at campus, and this in turn results in better sociocultural adjustment and emotional well-being (Brunsting et al., 2018).

This observation squares with a wider psychological literature, which has established the importance of sense of belonging on campus (e.g., Caligiuri et al., 2020; Slaten et al., 2016), and inclusion within and identification with multiple groups within the university (e.g., Cruwys et al., 2020; Graupensperger et al., 2020) in supporting students' subjective well-being and educational outcomes, especially those from minority backgrounds (Walton & Cohen, 2011). Building on this groundwork, the current research also focuses on exploring international students' feelings of belonging on campus, patterns of identification with different groups of students on campus, and the consequences of these for well-being. In an extension to past work, in the current research we were also interested in the role of distinct campus spaces in supporting feelings of belonging, and the role of individual differences in orientation towards

cultures of origin and the host culture (i.e., acculturation orientations: Berry, 1997) in determining exactly where international students experience this belonging.

Social process and (international) student well-being

Research on the 'social cure' (Jetten et al., 2009; Jetten et al., 2012) highlights the importance of group memberships to coping with important life transitions. According to the social identity model of identity change that has developed from this literature (Haslam et al., 2021), the capacity for individuals to maintain well-being in times of change is supported by social group memberships that they are able to maintain and acquire as a result of the transition they face. Group memberships furnish individuals with a sense of identity, and in so provide psychological resources like meaning, control and esteem (Greenaway et al., 2016), and connect the individual to a network of others who contribute actual or perceived social support (e.g., Steffens et al., 2016). Because of these resources, having access to multiple groups, and experiencing identification with these, should provide resilience in the face of stress and strain (Jones & Jetten, 2011), and contribute positively to satisfaction and well-being more generally (Jetten at al., 2015).

The benefits of (multiple) group memberships have been demonstrated among a variety of population groups experiencing important life transitions, including medical transitions (Jones et al., 2011), retirement (Haslam et al., 2018), as well as transitions to study. For example, British university students who reported involvement in multiple social groups before coming to university, and who perceived more compatibility between their pre-existing group memberships and university life, showed better coping in their first year (Iyer et al., 2009), effects that were mediated through identification with their new university. Similarly, among American university students who joined sports groups, across-semester increases in identification with these groups predicted greater well-being (Graupensperger et al., 2020). The causal role of group identification in supporting well-being is demonstrated by experimental

work. German university students who thought about shared goals, values and positive experiences with their social groups (versus differences between themselves and other group members, and negative experiences of the group) reported more perceived social support and collective self-efficacy, which was in turn associated with reduced emotional exhaustion (Junker et al., 2019).

The experience of studying abroad is also a significant and challenging transition, during which the individual leaves established social networks to establish themselves in a new and unfamiliar cultural environment (Hechanova-Alampay et al., 2002; Hendrickson et al., 2011). Given this context, evolving patterns of social connection and identification should be especially predictive of international students' well-being outcomes. Indeed, feelings of inclusion by domestic students and within the host culture contributes to satisfaction among international students (Wang et al., 2015). Similarly, inclusion in the ethnic minority group (Wei et al., 2012), and within wider category of international students (Schmitt et al., 2003), can be a significant source of support and satisfaction, especially in the face of discrimination. Very recent research confirms the importance of social connections across the first year of study abroad, as specified by the social identity model of identity change. Cruwys and colleagues (2020) tracked international students across a foundation year at an Australian university. Their results indicated that reported belonging to multiple group memberships prior to the year abroad, and maintaining group connections across the first semester of study, contributed to better well-being at the end of the first semester and to greater retention (rather than drop out) at the end of the first year.

This combined body of work suggests solid theoretical and empirical reasons to assume that the social transitions experienced by international students will be consequential for their coping with this transition and their well-being. Specifically, international students who develop a sense of identification with other students at their new university, and who join

multiple social groups on campus, should display better well-being than those who lack these bases of identification and social inclusion.

Finding one's place on campus

Studying abroad is not just a social transition – it is a physical one as well. For most international students, home is very far away. University campuses tend to become a 'second home' to many international students, who often live in halls of residence and spend significant time on campus for classes, revision, campus activities and socialising. Campus places are therefore central to the entire experience of being abroad, and are the physical setting in which other significant social- and self-related transformations occur. Despite this, the role of the campus spaces and place-related processes in supporting the inclusion and well-being of international students is relatively under-studied.

Environmental psychologists have long emphasised the emotional attachments people form to places, and how significant places can, over time, become part of individual identity (Hidalgo & Hernandez, 2001; Lewicka, 2011; Manzo, 2003). Place attachment describes the emotional bonds that individuals form towards physical surroundings that are individually or collectively significant (e.g., Billig, 2006; Mazumdar & Mazumdar, 2004). Similarly, place identity refers to the sub-structure of the self that consist of "memories, ideas, feelings, attitudes, values, preferences, meanings and conceptions of behaviour and experience which relate to the variety and complexity of physical settings" in which one lives and satisfies one's "biological, psychological, social, and cultural needs" (Proshansky et al., 1983, p.59). When individuals are attached to or identified with a place, this may be expressed through place-related attitudes and behaviours, such as protection and frequent visitation (e.g., Steadman, 2002; Vaske & Kobrin, 2001; see Manzo & Devine-Wright, 2020, for a recent review). Reciprocally, being in places that reflect one's attachments and identities can provide psychological resources to the individual, and buffer them against experiences of stress and fatigue (e.g., Korpela et al., 2001;

Morton et al., 2017; Scannell & Gifford, 2017). Thus, work in environmental psychology also emphasises the consequences of places, as well as place-related identities and attachments, to well-being (Rollero & De Piccoli, 2010).

Following this line of theory and research, it seems plausible that the capacity for students to find spaces on campus that satisfy their needs, and to develop a sense of attachment to their campus as a place, might be an important basis for well-being, in addition to the social processes reviewed in the previous section. Indeed, there is some evidence in support of this suggestion. For example, recent experimental research has found that reminding ethnic minority students of the existence of campus spaces catering to their group boosted feelings of belonging on campus and positive engagement in their studies (Kirby et al., 2020). Qualitative work with undergraduate students transitioning to university reveals the opposing dynamic, in which the inability to identify significant spaces on campus detracts from well-being (Chow & Healey, 2008). We were, however, unable to find larger-scale systematic explorations of the role of place attachments, and feelings of belonging in space, in supporting the well-being of international students. Accordingly, the current research also aimed to examine the causes and consequences of international students' sense of belonging on campus, and their felt comfort in specific campus places.

Acculturation orientations and places of belonging

Although finding a place for one's self and experiencing inclusion and belonging with others may be a universal need (Baumeister & Leary, 1995), individual international students may gravitate towards different groups (e.g., domestic students vs international students) and different spaces on campus as they seek satisfaction of the needs, interests or preferences they have. To understand this variation in needs, and how it might relate to both patterns of social connection and experiences of place, we turn to the literature on acculturation orientations.

According to Berry's model of acculturation (see Sam & Berry, 2010, for a recent overview), when individuals (e.g., international students) move from one culture (e.g., their home country) to another (e.g., university campus in another country), they are faced with questions of who they want to socialize with and where their place is in the new culture. This results in individuals likely to vary along two dimensions: (1) their desire to maintain connections to their culture of origin and the sense of identity embedded in this (termed "home orientation" in this chapter), and (2) the desire to engage in daily interactions with other ethnocultural groups in the larger society (termed "host orientation" in this chapter). In theory, these dimensions are independent, and individuals can be high or low on either dimension. Researchers working in this area typically distinguish between four distinct profiles – or acculturation strategies – that are created via the combination of these two dimensions: marginalization, separation, assimilation, and integration (Barry & Grilo, 2003; Sam & Berry, 2010).

Research conducted on a large sample of international exchange students from multiple countries studying in the UK (Demes & Geeraert, 2014) found that measures of individual differences in host and home orientations showed opposing relationships with psychological and sociocultural adaptations: Students higher on host orientation showed better overall well-being, whereas students higher on home orientation displayed worse overall well-being. Also, international students who are higher on host orientation are associated with less perceived general stress (Wei et al., 2012), higher satisfaction with life (Wang et al., 2015), and positive university belonging (Slaten et al., 2016). Just as acculturation orientations might guide the ways in which international students seek out contact with representatives of domestic students and fellow international students on campus, acculturation orientations might also determine the degree to which socially marked spaces on campus 'resonate' with the individual and are experienced as places of belonging (e.g., following Cheryan et al., 2009's work on ambient belonging among minorities in university).

We propose that the concepts of host orientation and home orientation might determine international students' identification with specific socially-marked campus spaces that will result in different levels of belonging in those specific campus spaces. For example, the provision of "separate spaces" for the minority group on campus should appeal more strongly to international students who are higher on home orientation (i.e., motivated by cultural maintenance). Conversely, international students who are higher on host orientation (i.e., motivated to engage with the host culture) should find the idea of separate spaces less appealing and should instead respond more favourably to spaces that support their desired connections with the majority group.

The present research

The specific campus where this research was conducted is both socially diverse, containing a mixture of student populations, and physically diverse, containing a variety of spaces that cater to different student groups, interests, and needs. The centre of the campus is dominated by two architecturally similar, but socially distinct spaces. At the centre of the campus is "The Forum", an interconnected cluster of buildings that provide services and support for all students. Opposite to this is the "INTO Building", occupied by the INTO organisation that provides services and support for international students specifically. Both these buildings have their own cafes and study spaces for all students to use. However, due to the differences in function, these two buildings are populated by different social groups and perceived very differently as a result. For example, a survey conducted in University of Exeter found that 50% of British students perceived INTO Building as "off-limits" to their in-group, and reciprocally 48% of international students perceived this as a campus space that British students were unlikely to visit (Fisher, 2018). Our own research, documented in Chapter 2, confirms that INTO is stereotypically associated with international students to a greater degree than other campus spaces, in the minds of both British and international students.

In addition to strongly socially marked spaces like INTO, there are other smaller-scale spaces that might have meaning to different student groups, for example study rooms, prayer rooms, or cafeterias that are preferentially used by one group more than the other. Of course, at any given time of day, any space on campus might be more heavily populated by domestic students, international students, or a mixture of both. Thus, the social meaning of campus spaces varies at a number of levels of scale, depending both on who is in a space at a given time and also which group that space is routinely associated with. We are interested in how the space-related and social experiences contributed to the well-being of international students on this campus. The specific aims of the current research are three-fold. First, building on the 'social cure' literature, we sought to explore the role of social processes related to identification and group membership in supporting the well-being of international students on this campus. Second, building on work in environmental psychology, we sought to explore whether place related attachments contribute to well-being, over and above social processes, and to consider which campus spaces might contribute to felt comfort and belonging. Finally, drawing on the acculturation literature, we sought to examine patterns of social connection and place attachment as a function of individual differences in orientation towards the host culture and towards the culture of origin.

We addressed these aims via a preliminary, cross-sectional survey of international students, and then through a longitudinal study that tracked international students across their first semester of study. These studies included measures of international students' acculturation orientations, sense of belonging at specific campus space, their identification as university students, multiple group memberships on campus, and their well-being outcomes. The cross-sectional study was exploratory whereas the longitudinal study aimed to follow-up on the patterns found in the cross-sectional study. Despite the initially exploratory goals, there were two general hypotheses guiding this work:

1. International students higher on host orientation will have higher sense of belonging on campus, higher identification as Exeter student, higher multiple group memberships, and thus higher resilience, better personal self-esteem, and greater life satisfaction.

2. International students higher on home orientation will feel more comfortable in campus spaces that reflect their identity as international students (i.e., buildings that are routinely associated with international students, like INTO, or spaces that are occupied by more international students in a given moment).

Cross-sectional Survey

Design and Participants

A total of 352 students of University of Exeter participated. Of these, 65 participants were excluded from the analyses due to not completing the survey, identifying both as British and international students, and having stayed in the UK for more than 8 years, leaving a final sample of 294 (M_{age} = 22.31, SD = 4.66, age ranging from 18 - 42; 93 male, 201 female). See Table 12 for participant demographic details. According to G*Power calculator, to detect a two-tailed correlation of medium to small effect size, r = 0.2 with 80% power and an alpha of .05, a sample size of 191 is needed.

Table 12. Demographic Characteristics

Characteristics	Cross-sectional
Total (N)	287
Age in years	
Mean	22.29
SD	4.6
Gender	
Male	91
Female	196
Other	-
Ethnic background	
Black	7
Chinese	134
Hispanic	4

Indian	13
Pakistani	5
Japanese	5
Korean	5
Multiracial	9
Other	37
White	68
Level of Programme	
Undergraduate	190
Postgraduate	97

Procedures

After obtaining the approval of Psychology Research Ethics Committee (PREC) for the cross-sectional study, international students who were currently studying in University of Exeter were invited to complete an online survey programmed using Qualtrics survey software. This online link could be accessed by students through Psychology Research Participation System, University of Exeter, and other social media platforms such as Facebook Groups and WeChat Groups. Informed consent was obtained from the participants prior answering the survey. Participants were informed that those who completed the survey and gave their university email address at the end of the survey, will have a chance to win one of the ten £20 Amazon vouchers. For first year psychology students, 1 course credit was instead given in return for their time.

Data collection was conducted between 21st Jan 2019 to 29th Mar 2019 (i.e., normal term time for University of Exeter). The survey respondents completed included measures of (1) experiences of specific spaces on campus, and their feelings about the campus as a whole; (2) patterns of social engagement, including multiple group memberships, experiences of discrimination, identification with other students and international students specifically; (3) well-being, and (4) acculturation orientations. Unless otherwise indicated, responses to questions were given on a 7-point scale ranging from a scale of 1 (strongly disagree) to 7 (strongly agree). A full copy of the questionnaire can be found in Appendix B.

Experiences of campus spaces and campus as a whole. After reading the purpose of the survey and giving consent, participants were first asked to list the top 5 spaces on campus that they had been in over the last 7 days (i.e., during term time). For each space listed, participants were asked the frequency of their visits to that space (on a scale of 0 to 7 days) and the amount of time they spent in the space (in minutes). Next, they were asked the purpose of their being in that space (e.g., "When thinking about this space, I use this space to meet other people"), the degree to which their presence in the space was voluntary or compelled (i.e., "I am in this space mainly because I choose to"), whether they perceived the space as public or private (e.g., "When I think about this space, I see it mainly as a public space"), and their feelings when they are in the space (e.g., "When I am in this space, I feel relaxed"). The last set of items served as the primary index of experience of space, whereas the others were measured as potential covariates. The primary index of experience of space contains 6 items, and the Cronbach's alpha coefficients ranged from .88 to .91 for the 5 different spaces mentioned.

Following that, participants completed a 6-item measure intended to capture their attachment to the campus as a whole (adapted from Hartig et. al., 1997). This measure aims to capture participants' sense of belonging and willingness to spend time in the campus as a whole, and included items like "In general, I like spending time on campus" ($\alpha = .82$). Participants also completed a further 3 items tapping their familiarity with and ability to navigate the campus, including items like "In general, I know my way around campus" ($\alpha = .71$).

Social integration. Next, participants completed a 4-item scale measuring the degree to which they were active across multiple group memberships (adapted from Haslam, Jetten, Cruwys, Dngle, & Haslam, 2018). This measure included items like: "I belong to lots of different groups at the university" ($\alpha = .87$). Participants also reported the degree to which their social network included people from 3 categories: British people, people from my home

country, and other international students who are not from my home country. For each category, participants estimated the percentage of their social network that fit into that category (totalling to 100%). Perceived discrimination on campus was measured using a 7-item scale (adapted from Gartska, Schmitt, Branscombe, & Hummert, 2004). Items included "I feel like I am personally treated differently to others because of my status as international student" ($\alpha = .86$).

Finally, participants also completed two measures of social identification, the first with students at University of Exeter in general, and the second with other international students at University of Exeter specifically. Each basis of identification was measure with 10 items taken from the group-level self-investment subscale of Leach, van Zomeren, Zebel, Vliek, Pennekamp, Doosje, Ouwerkerk, and Spears (2008). These 10 items cover the sub-dimensions of solidarity (i.e., participants' psychological bond with other students; e.g., "I feel committed to this university"), satisfaction (i.e., positive feelings about the group membership; e.g., "It is pleasant to be an Exeter university student"), and centrality (i.e., the degree to which the target group is central to the respondent's self-concept; e.g., "Being an Exeter university student is an important part of my identity"). These three subscales have Cronbach alpha coefficients that ranged from .76 to .90.

Well-being indicators. After the social connection measures, but before the identification scales, participants completed three well-being measures. The first was a 6-item resilience scale (taken from Smith, Dalen, Wiggins, Tooley, Christopher, & Bernard, 2008), which captures the self-perceived capacity to bounce back from adversity (e.g., "I tend to bounce back quickly after hard times"). Responses to these items were given on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree), $\alpha = .79$. Next, participants completed a 10-item personal self-esteem scale (Rosenberg, 1965) that aims to capture participants' feelings of self-worth (e.g., "On the whole, I am satisfied with myself"). Responses to these items were also given on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree),

α = .88. Finally, participants completed a 5-item satisfaction with life scale (taken from Diener, Emmons, Larsen, & Griffin, 1985) that captures overall life satisfaction (e.g., "In most ways my life is close to ideal"). Responses to this measure were given on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree), α = .80.

Acculturation orientations. Lastly, participants completed the 17-item Two Acculturation Dimensions Scale (taken from Ramos, Cassidy, Reicher, & Haslam, 2016). This measure contains two subscales, (1) willingness to participate in the British community (e.g., "I feel at ease with British people"; 8 items, α = .76), and (2) own culture maintenance (e.g., "I want to "hang out" with people from my country"; 9 items, α = .69.).

After giving their demographic details, participants were being thanked for their time and directed to different sources of support if they were distressed by any of the issues raised in the survey. They were also directed to a separate link to fill in their email addresses so that the principal investigator could contact them to administer their rewards.

Results

Preliminary checks

Preliminary analyses were conducted to ensure that there were no violations of the assumptions of analyses. Each scale was checked for normal distribution through visual inspection of histograms and the values of skewness and kurtosis. Outliers were identified through visual inspection of boxplots. All outliers were retained in the analyses reported because removing them did not have any substantive effect on the patterns reported in this paper.

Next, correlations between demographic factors (age, gender, ethnicity, nationality, religious, actively practising that religion, level of programme, active participation in sports or societies, first time studying in the UK, join other organisations outside university, and

intentions to work in the UK after studies) and acculturation orientations were inspected. This did not reveal any potential confounding variables, thus the analyses in this paper proceeded without demographic covariates.

Associations among variables of interest. Table 13 presents the correlations among the variables of interest: host and home orientations (IVs), feelings of belonging on campus, identification measures (mediators), well-being outcomes (DVs), perceived discrimination on campus, and social network of different groups. Inspection of these correlations reveals several noteworthy patterns of association.

First, the two acculturation orientations (i.e., $M_{\text{host orientation}} = 5.050$, $SD = 0.831$; $M_{\text{home orientation}} = 4.546$, $SD = 0.895$) were negatively correlated, $r(287) = -0.153$, $p = 0.009$. This is suggestive of a perceived incompatibility between host and home orientations: participants who are higher on home orientation tend to be lower on host orientation, and vice versa. However, it is also noteworthy that the size of this correlation is small, suggesting that these orientations are distinct (i.e., not redundant) among the participants.

Second, acculturation orientations are correlated with the outcomes of interest, though in different ways. Host orientation is associated with feelings of belonging on campus, as well as identification as an Exeter student (but not international students), multiple group memberships, and having friendship networks composed of more majority and less minority group members. Host orientation was also positively associated with well-being outcomes (resilience, and personal self-esteem, but not satisfaction with life), and negatively with perceived discrimination.

In comparison, home orientation is associated with identification with international students (but not the student body as a whole), multiple group memberships, and having a social network comprised of international students from their respective home country than majority group members. Home orientation was also positively associated with well-being

outcomes (satisfaction with life, but not resilience and personal self-esteem), but not with feelings of belonging on campus or perceived discrimination on campus.

Also noteworthy are the patterns of association between feelings of belonging on campus and well-being outcomes. International students who experienced a sense of belonging on campus consistently reported better well-being across measures of resilience, personal self-esteem, and satisfaction with life. International students who identified more strongly with other students also reported better well-being, but these correlations were slightly weaker, whereas identification with Exeter international students was less consistently related to well-being outcomes. Multiple group memberships also showed less consistency in relation to well-being outcomes.

Moving forward, these correlational patterns raise the question of whether feelings of belonging and/ or patterns of identification and social relationships might explain the possible effects of different acculturation orientations on well-being outcomes. We conducted parallel mediation analyses to examine these possibilities.

Table 13. Correlations between host and home orientations, feelings of belonging on campus, identification measures, well-being outcomes, perceived discrimination on campus, and social network of different groups, *n* = 287.

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Host orientation	5.050	0.831	--	-.153**	.401**	.389**	.023	.165**	.131*	.162**	.074	-.472**	.349**	-.199**	-.149*
2. Home orientation	4.546	0.895		--	-.006	.044	.345**	.117*	-.034	.051	.172**	.078	-.213**	.264**	-.084
3. Feelings of belonging on campus	4.253	1.016			--	.573**	.171**	.411**	.212**	.246**	.302**	-.412**	.114	-.027	-.096
4. Identification as Exeter student	4.827	1.014				--	.255**	.267**	.167**	.211**	.312**	-.430**	.113	.015	-.146*
5. Identification with international students	5.009	0.996					--	.164**	.045	.186**	.194**	-.089	-.123*	-.019	.162**
6. Multiple group memberships	3.974	1.335						--	.150*	.116	.256**	-.136*	.159**	-.045	-.124*
7. Resilience	3.154	0.674							--	.454**	.370**	-.219**	.109	-.096	-.004
8. Personal self-esteem	3.378	0.692								--	.518**	-.270**	.075	-.100	.038
9. Satisfaction with life	4.284	1.096									--	-.187**	.010	.000	-.0119
10. Perceived discrimination on campus	3.078	1.094										--	-.184**	.161**	.008
11. Social network - British	31.146	27.492											--	-.647**	-.333**
12. Social network – people from home country	33.957	30.005												--	-.504**
13. Social network – other international students	34.897	24.271													--

Note: * *p* < .05 (two-tailed), ** *p* < .01 (two-tailed)

Mediation Analyses.

A series of mediational models were conducted using PROCESS Model 4 (Hayes, 2013) to test for indirect pathways between host orientation and well-being via belonging and patterns of identification and multiple group memberships. We did not include perceived discrimination on campus, or social network composition as mediators because these appear to be a reflection of host and home orientation. Mediational analyses focussed on host orientation because this was most consistently correlated with potential mediators and well-being outcomes[5].

Resilience. As shown in Figure 5, host orientation was significantly associated with feelings of belonging on campus ($B = .49$, $SE = .07$, $t = 7.38$, $p < .001$, 95% *CI*s [.3801; .5992]), identification as Exeter student ($B = .48$, $SE = .07$, $t = 7.18$, $p < .001$, 95% *CI*s [.3680; .5877]), and multiple group memberships ($B = .26$, $SE = .09$, $t = 2.81$, $p = .005$, 95% *CI*s [.1092; .4191]). However, only feelings of belonging on campus was associated with resilience, though not significantly so ($B = .09$, $SE = .05$, $t = 1.72$, $p = .087$, 95% *CI*s [.0033; .1722]). Bootstrapping analyses revealed no indirect pathways between host orientation and resilience via the mediators (see Table 14). The model including all predictors explained 5% of the total variance in resilience, $F (5, 280) = 3.20$, $p = .008$.

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[5] For interest, we did also find two significant indirect effects between home orientation and well-being outcomes. They are: (1) home orientation significantly associated with identification with international students on campus ($B = .38$, $SE = .06$, $t = 6.19$, $p < .001$, 95% *CI*s [.2815; .4860]), and then significantly linked with personal self-esteem ($B = .09$, $SE = .04$, $t = 2.12$, $p = .035$, 95% *CI*s [.0204; .1649]), bootstrapping indirect effects ($B = .04$, $SE = .02$, 95% *CI*s [.0106; .0705]); and (2) home orientation significantly associated with multiple group memberships ($B = .17$, $SE = .09$, $t = 1.98$, $p = .048$, 95% *CI*s [.0291; .3188]), and then significantly linked with satisfaction with life ($B = .10$, $SE = .05$, $t = 2.08$, $p = .039$, 95% *CI*s [.0213; .1856]), bootstrapping indirect effects ($B = .02$, $SE = .02$, 95% *CI*s [.0002; .0580]).
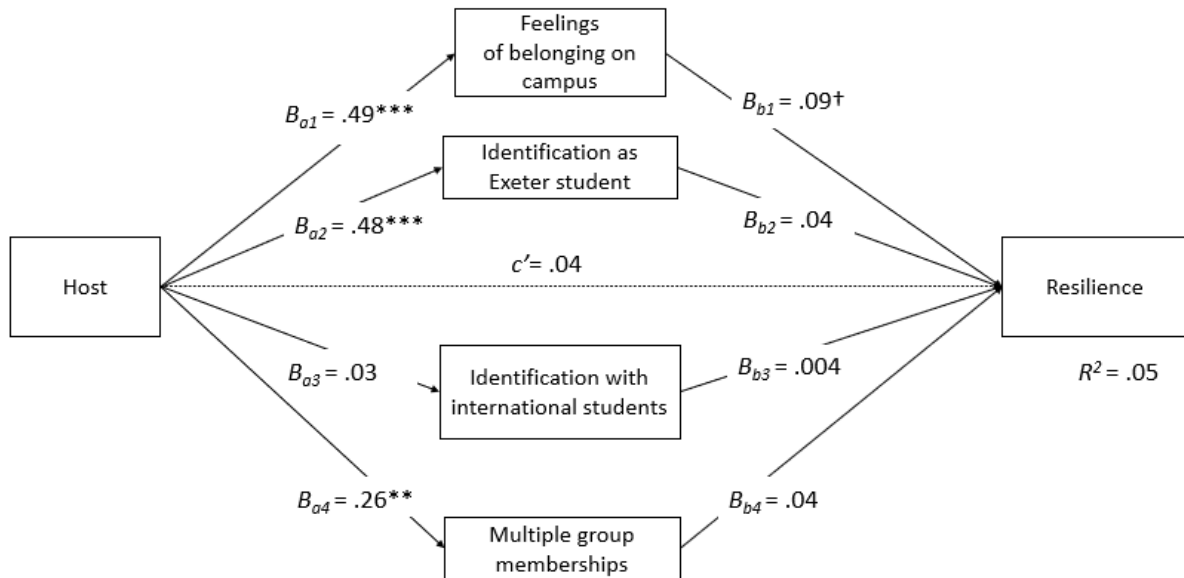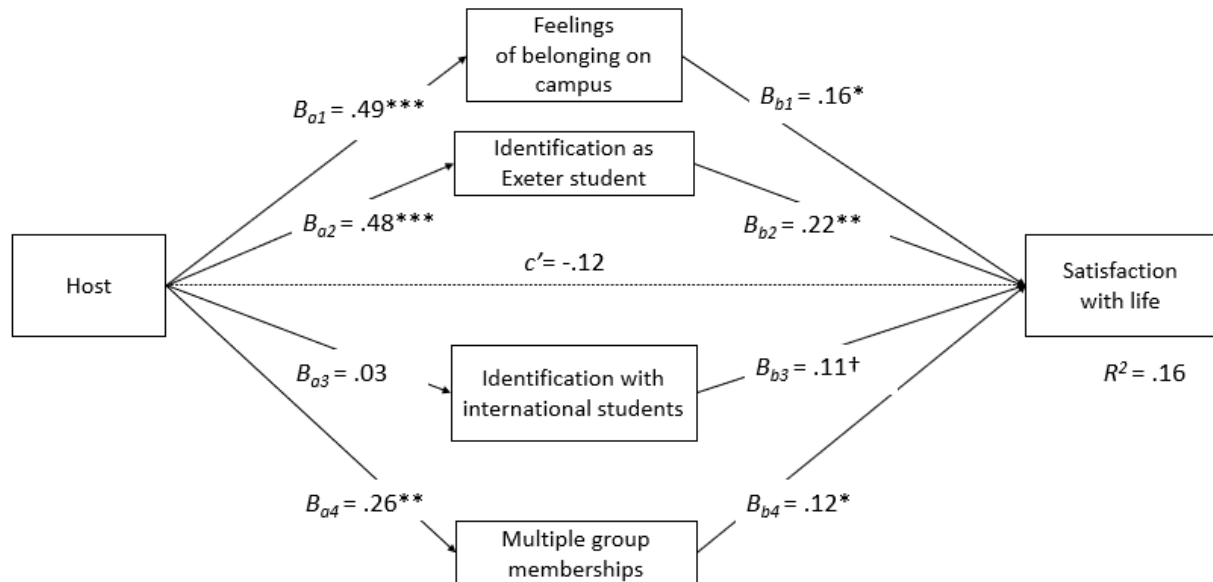
Figure 5. Parallel mediation analyses of feelings of belonging on campus and identification measures in the relationship between host orientation and resilience. † $p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

Personal self-esteem. As shown in Figure 6, in the model predicting personal self-esteem, host orientation was again a significant predictor of feelings of belonging on campus ($B = .49$, $SE = .07$, $t = 7.38$, $p < .001$, 95% CIs [.3801; .5992]), identification as Exeter student ($B = .48$, $SE = .07$, $t = 7.18$, $p < .001$, 95% CIs [.3680; .5877]), and multiple group memberships ($B = .26$, $SE = .09$, $t = 2.81$, $p = .005$, 95% CIs [.1092; .4191]). However, only feelings of belonging on campus was significantly associated with personal self-esteem ($B = .11$, $SE = .05$, $t = 2.10$, $p = .036$, 95% CIs [.0233; .1930]). Bootstrapping analyses revealed a significant indirect effect between host orientation and personal self-esteem via feeling of belonging on campus (see Table 14).

Although identification with international students on campus was significantly associated with personal self-esteem ($B = .10$, $SE = .04$, $t = 2.38$, $p = .018$, 95% CIs [.0300; .1663]), the indirect pathway via this was not significant (see Table 14). The model including all predictors explained 9% of the total variance in personal self-esteem, $F (5, 280)$

$= 5.51, p < .001$. Notably, the only significant predictor in this model was feelings of belonging on campus.
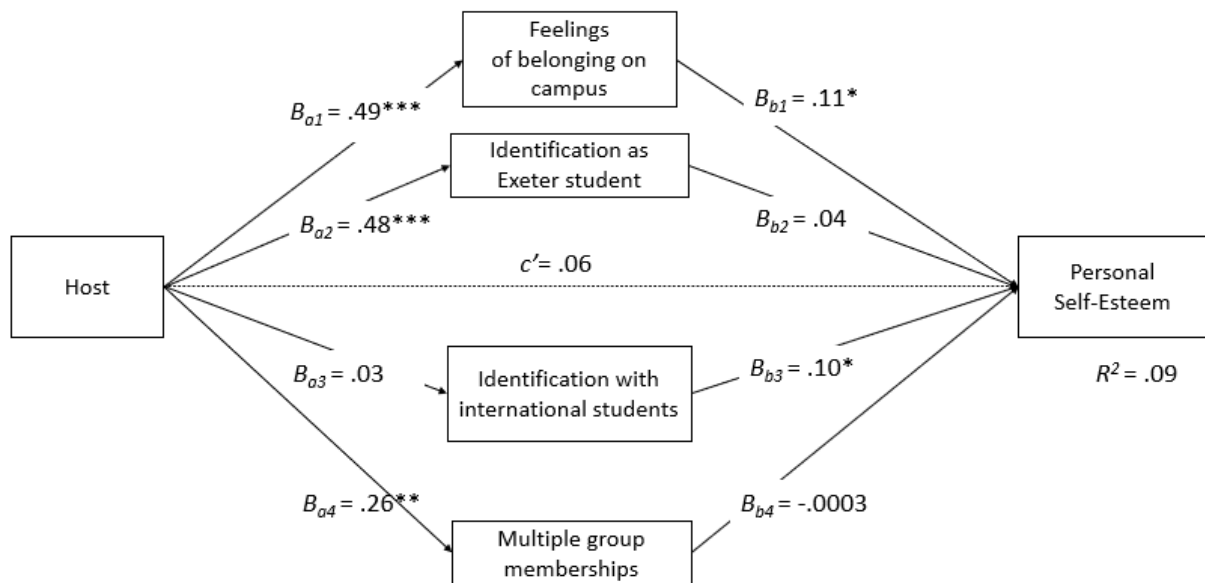
Figure 6. Parallel mediation analyses of feelings in campus and identification measures in the relationship between host orientation and personal self-esteem. $*p < .05, **p < .01, ***p < .001$.

Satisfaction with life. As shown in Figure 7, in the model predicting satisfaction with life, host orientation was again a significant predictor of feelings of belonging on campus ($B = .49, SE = .07, t = 7.38, p < .001$, 95% *CI*s [.3801; .5992]), identification as Exeter student ($B = .48, SE = .07, t = 7.18, p < .001$, 95% *CI*s [.3680; .5877]), and multiple group memberships ($B = .26, SE = .09, t = 2.81, p = .005$, 95% *CI*s [.1092; .4191]). Interestingly, feelings of belonging on campus ($B = .16, SE = .08, t = 2.05, p = .042$, 95% *CI*s [.0313; .2905]); identification as Exeter student ($B = .22, SE = .08, t = 2.90, p = .004$, 95% *CI*s [.0948; .3453]); and multiple group memberships ($B = .11, SE = .05, t = 2.31, p = .022$, 95% *CI*s [.0327; .1970]) were all significantly associated with satisfaction with life, whereas identification with international students was only weakly associated with this ($B = .11, SE = .06, t = 1.67, p = .096$, 95% *CI*s [.0013; .2096]). Bootstrapping analyses revealed significant indirect pathways

between host orientation and satisfaction with life via belonging on campus, identification with students, and multiple group memberships, but not identification with international students (see Table 14). With all predictors included, the overall model explained 16% of the total variance in satisfaction with life, $F (5, 280) = 10.41$, $p < .001$.

Figure 7. Parallel mediation analyses of feelings in campus and identification measures in the relationship between host orientation and satisfaction with life. † $p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

Table 14. Comparison of the indirect effects of host orientation on different well-being outcomes through different identification measures

Indirect effect(s) of Host Orientation via M on:	Coefficients		95% CIs	
	Effect	SE	LLCI	ULCI
Resilience				
Total	.0708	.0275	.0286	.1179
Feelings of Belonging on Campus (M1)	.0430	.0292	-.0003	.0963
Identification as Exeter Student (M2)	.0179	.0292	-.0238	.0714
Identification with International Students (M3)	-.0001	.0045	-.0080	.0062
Multiple Group Memberships (M4)	.0100	.0105	-.0018	.0348
Personal Self-Esteem				
Total	.0753	.0323	.0277	.1368
Feelings of Belonging on Campus (M1)	.0529	.0299	.0073	.1046
Identification as Exeter Student (M2)	.0198	.0296	-.0240	.0759
Identification with International Students (M3)	.0026	.0092	-.0096	.0213
Multiple Group Memberships (M4)	-.0001	.0096	-.0168	.0149

Satisfaction with Life

Total	.2171	.0519	.1432	.3134
Feelings of Belonging on Campus (M1)	.0788	.0405	.0164	.1510
Identification as Exeter Student (M2)	.1052	.0437	.0391	.1833
Identification with International Students (M3)	.0028	.0105	-.0102	.0270
Multiple Group Memberships (M4)	.0303	.0172	.0096	.0708

Summary: The above analyses identify feelings of belonging on campus as a significant mediator of relationships between host orientation with personal self-esteem and satisfaction with life, but not with resilience. Also of interest is the finding that independent of indirect pathways, feelings of belonging on campus was the most consistent, and typically the strongest predictor of well-being outcomes among the variables included in these analyses. As such, although social connections, and in particular multiple group memberships and identification with other students (including international students), have been argued in past research to be important bases of coping with acculturation stress among international students, these variables proved to be less important when compared to feelings of belonging on campus, at least in this cross-sectional survey study. These patterns suggest that feelings of belonging on campus might be an interesting and important variable to understand and explore in its own right. With that in mind, our next set of analyses were intended to explore exactly where on campus international students experience the most comfort and whether this varies according to their acculturation orientations.

Mixed Model Analyses.

The above analyses demonstrate that (a) feelings of belonging on campus – broadly measured – are an important factor in determining the well-being of international students, and (b) students more strongly oriented to host culture are more inclined to feel comfortable on campus, and therefore to experience the well-being benefits of this. But campuses contain multiple spaces, and feelings might also vary as a function of which specific campus spaces

individuals are engaged with. To explore this more detailed question of which spaces are comfortable – and for whom – we conducted a series of mixed model analyses.

Mixed models were chosen because we account for their hierarchically nested structure of the data that we collected, in which participants were asked to nominate multiple spaces, and then to rate their feelings within each of these spaces. To prepare for these analyses, we first coded all spaces that were spontaneously generated by participants in their responses to our survey. The full list of spaces was initially summarised according to 11 venue codes: (1) departments, (2) general study spaces, (3) INTO Building (i.e., English learning centre for international students), (4) student support services, (5) sports areas, (6) religious spaces, (7) food and drink outlets, (8) general recreational spaces, (9) accommodation residents, (10) The Forum (i.e., student centre that consists of auditorium for lectures, entrance into the university main library, Student Guild, student information desk, career zone, cafes and shops), and (11) others. From this initial coding, we identified 6 campus spaces that were consistently mentioned by at least 20% of participants (i.e., 57 of the 287 participants), with the remaining spaces being mention by less than 9% of participants (see Table 15). The commonly mentioned spaces in order of frequency were: Departments, general study spaces, INTO Building, sports areas, food and drink outlets, and the Forum. The analyses focused on these 6 most frequently mentioned spaces.

Table 15. Frequency of campus spaces mentioned by participants (in percentage), $n = 287$.

Code	Campus spaces	Frequency	Percentage (out of 287)
1	Departments	275	95.8%
2	General study spaces	154	53.7%
3	INTO Building	62	21.6%
4	Student support services	8	2.8%
5	Sports areas	69	24.0%
6	Religious spaces	5	1.7%
7	Food and drink outlets	114	39.7%

8	General recreational spaces	17	5.9%
9	Accommodation residents	24	8.4%
10	The Forum	187	65.2%
11	Others	5	1.7%

In the mixed model analyses, the 6 campus spaces were specified as a Level 1 fixed factor (i.e., varying within participants) and participants' acculturation orientations (i.e., host vs home) were specified as Level 2 fixed factors (i.e., varying between participants). Host and home orientation were centred prior to analysis. The model included random intercepts and the covariance structure was diagonal. The model was tested upon the dependent variable space comfort. Data were analysed via SPSS Linear Mixed Models. The analysis was specified to the main and interactive effects of all 3 independent variables (space, host orientation, and home orientation). The coefficients from this analysis are reported in Table 16.

Table 16. Mixed Model Analyses. Type III Tests of Fixed Effects upon Space Comfort

Predictor	$df\ 1$	$df\ 2$	F	p
Space	5	972.18	18.27	.000
Host	1	403.41	23.46	.000
Home	1	440.27	2.71	.100
Space x Host	5	985.59	3.04	.010
Space x Home	5	981.92	0.36	.876
Host x Home	1	564.95	0.34	.558
Space x Host x Home	5	1032.19	2.63	.022

As can be seen in Table 5, in addition to a main effect of host orientation – which reflected the fact that participants higher in host orientation tended to evaluate campus spaces more positively – there was a significant main effect of space. Follow up comparisons showed that relative to The Forum, departments were experienced as less comfortable, t (942.26) = -4.03, $p < .001$, 95% CIs [-0.3722; -0.1284], whereas sports areas, t (889.50) = 4.23, $p < .001$, 95% CIs [0.2396; 0.6538], and food and drink outlets, t (1029.07) = 2.38, $p = .017$, 95% CIs

[0.0365; 0.3761] were experienced as more comfortable. Comfort in other venues did not differ significantly from The Forum. Further to these main effects, there was a significant interaction between host orientation and space, as well as a significant three-way interaction involving all variables.

To understand the interactive patterns better, we first examined the correlations between acculturation orientations and comfort in each of the 6 campus spaces. As can be seen in Table 17, host orientation was positively correlated with comfort in all spaces, except for INTO Building. In INTO Building, participants higher in host orientation tended to feel less comfortable (though non-significantly so). Interestingly, the opposite pattern is evident for the correlations between home orientation and comfort in each of the spaces: this positive relationship was strongest, and indeed only significant, for comfort in INTO Building.

Table 17. Correlations between acculturation orientations and different venues on space comfort.

Venue (*n*)	Host Orientation	Home Orientation
	r (*p* value)	*r* (*p* value)
Departments (598)	.251** (.000)	.066 (.109)
General study spaces (187)	.126 (.087)	.056 (.445)
INTO Building (61)	-.184 (.157)	.326* (.010)
Sports areas (730)	.319** (.006)	-.007 (.950)
Food and drink outlet (146)	.171* (.039)	.057 (.491)
The Forum (194)	.351** (.000)	.006 (.938)

Examination of the simple effects showed that the two-way interaction between space and host orientation was due to the relationship between host orientation and comfort differing significantly between The Forum and both general study spaces, t (1002.74) = -2.05, p = .040, 95% *CIs* [-0.4066; -0.0091], and INTO Building, t (812.07) = -2.77, p = .006, 95% *CIs* [-0.6932;

-0.1184]. Although host orientation was generally associated with comfort in campus spaces, this attenuated in study spaces and reversed in INTO Building.

Further probing of the significant three-way interaction revealed that while departments, and to a less consistent extent the INTO Building, were evaluated negatively, and sports areas positively, relative to The Forum, among international students high in host orientation (irrespective of their home orientation). Next, INTO Building was especially positively evaluated (relative to The Forum) among international students who were both high in home orientation and low in host orientation. For international students low on both orientations, departments were negatively evaluated whereas food and drink outlets positively evaluated (relative to The Forum) (see Table 7 for all comparisons).

Table 18. Simple effects on space evaluation for each venue relative to The Forum

Venue	Estimates (*SE*)	*df*	*t* (*p*)	95% CIs	
				Lower	Upper
International students with both high host and home orientation					
Departments	-.32 (.13)	887.87	-2.41 (.016)	-.5889	-.0601
General study spaces	.01 (.18)	1008.26	.037 (.971)	-.3403	.3533
INTO Building	-.34 (.29)	806.60	-1.18 (.237)	-.9004	.2230
Sports areas	.60 (.25)	762.11	2.43 (.015)	.1142	1.0788
Food and drink outlet	.25 (.19)	1019.03	1.33 (.184)	-.1208	.6296
International students with high host but low home orientation					
Departments	-.29 (.12)	885.92	-2.54 (.011)	-.5190	-.0668
General study spaces	-.18 (.14)	1016.14	-1.27 (.203)	-.4513	.0961
INTO Building	-.24 (.26)	762.23	-.91 (.361)	-.7498	.2736
Sports areas	.56 (.24)	728.33	2.36 (.019)	.0937	1.0332
Food and drink outlet	.03 (.14)	979.72	.23 (.818)	-.2499	.3162
International students with low host but high home orientation					
Departments	-.10 (.11)	936.45	-.93 (.355)	-.3167	.1138
General study spaces	.23 (.15)	1004.31	1.53 (.127)	-.0648	.5207
INTO Building	.68 (.18)	873.47	3.84 (.000)	.3312	1.0251
Sports areas	.36 (.25)	1021.40	1.41 (.158)	-.1401	.8600
Food and drink outlet	.10 (.17)	1035.10	.62 (.535)	-.2265	.4358
International students with both low host and home orientation					
Departments	-.28 (.12)	945.92	-2.42 (.016)	-.5111	-.0536

General study spaces	.28 (.15)	1075.02	1.81 (.071)	-.0234	.5817
INTO Building	.07 (.22)	696.90	.31 (.759)	-.3719	.5099
Sports areas	.27 (.22)	683.79	1.24 (.217)	-.1572	.6911
Food and drink outlet	.43 (.17)	1066.28	2.52 (.012)	.0954	.7703

Summary: The above mixed model analyses identified that international students who differ in their orientation to host culture (especially when this is combined with countervailing differences in orientation to home culture) experience specific campus spaces differently. In particular, being in INTO Building (i.e., a separate space for international students to learn English), is associated with unique experiences relative to other campus spaces. To the extent that international students who were oriented to host culture, they experienced all campus spaces more positively, except for the INTO Building, for which higher host orientation was associated with more discomfort in the space. Conversely, students higher in home orientation experienced greater comfort in the INTO Building and relative to other spaces, especially when this combined with low host orientation.[6]

Longitudinal Survey

To follow-up on the cross-sectional patterns observed above, and to properly examine the dynamics among individual acculturation orientations, feelings of belonging on campus, patterns of identification with the university, and well-being outcomes, we conducted a longitudinal study tracking international students in their first semester of studying abroad in the UK. This longitudinal survey consisted of four time-points in 2019: Time 1 [T1] around mid October (the start of term), Time 2 [T2] at the end of October, Time 3 [T3] around mid November, and Time 4 [T4] at the end of November.

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[6] Besides comfort in space as the DV, the model was tested on other DVs, namely: perceived space as private, visiting the space by choice, days visited, minutes spent, using the space for achievement, using the space for affiliation. All these revealed non-significant interactions (see Table 8 at Appendix B).

The longitudinal survey included many of the measures detailed above. To get a more detailed picture of experiences of specific spaces, we refined that aspect of the survey. Instead of self-nominating spaces, we asked about 4 specific spaces: accommodation, departments, INTO Building, and The Forum, as well as an optional venue self-reported by the participants. Rather than assuming which spaces were more or less international (i.e., INTO Building versus The Forum) as we did in the previous cross-sectional analyses (and indeed in the experiments reported in Chapter 3), we explicitly asked participants to rate the degree to which spaces were occupied by international students when they were in them. This provides a more direct measurement of the idea that different spaces feel comfortable to international students because their profile matches the individual's acculturation orientation.

Participants

Via the same methods as the first, cross-sectional study, we recruited international students who are first year studying abroad. The initial sample recruited was 174 (Mage $= 21.52$, $SD = 3.62$, age ranging from 18 – 37; 40 male, 132 female, 2 others). See Table 20 for participant demographic details. Of the 174 participants who were initially included in the survey, 139 completed all four time-points, and 35 missed at least one time-point.

Table 20. Demographic Characteristics

Characteristics	Longitudinal
Total (N)	174
Age in years	
Mean	21.52
SD	3.6
Gender	
Male	40
Female	132
Other	2
Ethnic background	
Black	4

Chinese	89
Hispanic	5
Indian	11
Pakistani	2
Japanese	1
Korean	1
Multiracial	3
Other	10
White	48
Level of Programme	
Undergraduate	103
Postgraduate	71

Procedures

The longitudinal study followed the same design and procedure described in the cross-sectional study, but with some slight changes and additional measures. First, participants filled in an online pre-assessment survey that included acculturation orientations measures and demographic details. Only international students who are in their first year studying on campus were selected to proceed with the following 4 surveys. Next, instead of asking participants to list out their top 5 spaces on campus that they have been over the last 7 days (i.e., during term time), we specifically determined 4 spaces for them to rate (i.e., accommodation, academic department, INTO Building and The Forum), and giving the 5th space as a campus space of their choice to rate. Next, we directly assessed the perceived "international-ness" of each space (as well as a number of additional social parameters, see Appendix B). Specifically, participants responded to the statement "When I think about this space, I see it mainly as an international student-occupied space" on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). After completing ratings for these 5 spaces, participants were asked "Next, over the last week on campus, what are other venues on campus where you have spent more than 30 minutes of your time? (list as many as you can recall)". All other measures of belonging

on campus, social connections, well-being, and acculturation orientations were the same (refer to Appendix B).

Results

Associations among variables of interest.

Tables 21a, b, c and d (see Appendix B) present the correlations among the variables of interest at each time-point. Inspection of these correlations reveals several noteworthy patterns of association. First, at each time-point host orientation is positively correlated with feelings of belonging on campus, identification as Exeter student, and personal self-esteem, but is not correlated with identification with international students, multiple group memberships, resilience or satisfaction with life. In comparison, our cross-sectional study similarly observed correlations between host orientation and feelings of belonging on campus and identification as Exeter student (but not international students), but also correlates with multiple group memberships and all well-being outcomes (resilience, and personal self-esteem, but not satisfaction with life). As such, the scope of associations between host orientation and outcomes seems narrower in this dataset.

Next, at all time-points, feelings of belonging on campus are positively correlated with satisfaction with life, whereas the correlations between feelings of belonging on campus and resilience and personal self-esteem are less consistent. In comparison, our cross-sectional study observed correlations between feelings of belonging on campus and all well-being measures (i.e., resilience, personal self-esteem, and satisfaction with life). Again, the scope of associations in this dataset seems narrower than the previous study.

Longitudinal analysis.

After inspecting the patterns of correlation, we proceeded to analyse the potential longitudinal patterns of mediation among the variables using auto-regressive cross-lagged

models (ARCL). We analysed the data using Mplus 7 (Muthén & Muthén, 2012). For the ARCL models, we first examined the least constrained baseline model, where the auto-regressive and cross-lagged effects were allowed to vary over time. Then we examined models constraining the cross-lagged and auto-regressive paths across time-points, respectively. We performed chi-square difference tests to determine the final model. For all models, demographic covariates (gender, ethnicity, and level of programme) were controlled. The average missingness rate from all variables included in the current analyses was about 5.9%; thus, we used full information maximum likelihood estimation, which is less biased and more efficient than traditional missing data techniques (Collins et al., 2001; Enders & Bandalos, 2001; Peters & Enders, 2002).

We explored two sets of cross-lagged path analyses. The first set of analyses consisted of four time-points, in which we examined cross-lagged paths from host orientation to four potential mediators, namely (1) feelings of belonging on campus, (2) identification as Exeter student, (3) identification with international students, and (4) multiple group memberships; and then cross-lagged paths from these four potential mediators to the well-being outcomes of (1) resilience, (2) personal self-esteem, and (3) satisfaction with life. Due to a high degree of across time stability in the variables, the second set of analyses instead drew on three time-points only (i.e., Time 3 was dropped), in which we examined cross-lagged paths from host orientation first to feelings of belonging on campus, and then from this to the social connection measures of (1) identification as Exeter student, (2) identification with international students, and (3) multiple group memberships.

Ultimately, these analyses revealed a high degree of stability in variables across time, and very little evidence of significant longitudinal pathways between variables of interest. The exception to this was a marginally significant across-time pathway between feelings of belonging on campus and multiple group memberships. Full details of these models are

reported in Appendix B. Accordingly, although our previous study (i.e., Study 4) suggested that feelings of belonging on campus were a central mediator of associations between acculturation orientations and well-being, and that this place-related attachment was more important than various social connection indicators, longitudinal analyses provided limited support for this contention. Over time, host orientation was only weakly related to feelings of belonging on campus, and this alone did not have identifiable across time well-being consequences. Nonetheless, there was some evidence that feelings of belonging on campus preceded the acquisition of group memberships.

Mixed Model Analyses.

The above analyses provide a broad picture of the correlates of felt belonging on campus as a whole. Yet campuses contain multiple spaces, and feelings of belonging on campus might vary according to the specific spaces that international students are engaged with. To explore this more detailed picture, we conducted a series of mixed model analyses that examined feelings of comfort in specific campus spaces. At each time-point, participants were asked to rate their comfort within (1) their accommodation, (2) their academic departments, (3) INTO Building, (4) The Forum and (5) a space of their own choosing that they had visited in the previous week. Comfort in these spaces was analysed as a function of the individual's acculturation orientation and the perceived international-ness of that space when they visited it.

Before examining predictors of felt comfort in spaces, we ran an empty model with random intercepts for participant, space and time. This revealed important clustering in the model for participants and space (but not time; perhaps reflecting the overall across-time stability already observed). The ICC indicated that 35.68% of the total variability was attributable to participants, and 12.81% of the total variability attributable to the spaces. Time,

in comparison, contributed only 0.27% of the total variability. Based on this we collapsed perceived space international-ness across all 4 time-points according to each rated space.

We were primarily interested on whether the perceived international-ness of a campus space interacted with international students' acculturation orientations to predict their feelings of comfort in spaces. To test this, we re-ran the mixed model, including random intercepts for participant and space, and entering host orientation and home orientation (grand mean centred), and perceived international-ness (space centred) as fixed predictors (entered as covariates). The model was specified to test all main and interactive effects of these variables. As shown in Table 24, this analysis revealed main effects of host orientation and perceived international-ness. We found a significant two-way interaction between home orientation and perceived international-ness, as well as a significant three-way interaction among host orientation, home orientation and perceived international-ness. We found similar results after controlling for gender, ethnicity and level of education (refer to Table 25 at Appendix B).

Table 24. Mixed Model Analyses. Type III Tests of Fixed Effects upon Space Comfort

	$df\,1$	$df\,2$	F	p
Host	1	170.39	20.95	.000
Home	1	169.31	1.32	.250
Perceived international-ness		2502.35	48.78	.000
Perceived international-ness x Host	1	2510.33	.12	.740
Perceived international-ness x Home	1	2477.68	9.87	.002
Host x Home	1	174.89	.34	.560
Perceived international-ness x Host x Home	1	2465.79	9.36	.002

Table 26 shows the coefficients for the relationship between perceived international-ness and comfort at each combination of host and home orientation. These coefficients reveal that although participants always felt more comfortable in spaces that were perceived as more

international (all coefficients are positive), this relationship was strongest among those who were simultaneously high on home orientation and low on host orientation, and was weakest among those who were low on both home and host orientation. Reflecting this, further probing of the three-way interaction revealed that the overall two-way interaction between home orientation and perceived international-ness was significant when host orientation was low, $F(1, 2453.41) = 18.28$, $p < .001$, but not when host orientation was high, $F(1, 2431.78) = .13$, $p = .72$.[7]

Table 26. Simple effects of perceived international-ness on space comfort at different combinations of host and home orientation.

	Coefficient	S.E.	t	p
Low Host, Low Home	.019	.023	0.82	.412
Low Host, High Home	.149	.022	6.78	.000
High Host, Low Home	.071	.019	3.70	.000
High Host, High Home	.082	.023	3.60	.000

Summary. The above mixed model analyses revealed that international students generally felt more comfortable in campus spaces perceived as more international. This pattern of relationship is strongest among those who were both high on home orientation and low on host orientation, but was weakest among those who were low on both home and host orientation. These findings serve as empirical evidence that individual differences of international students

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[7] Besides comfort in space as the DV, the model was tested on other DVs, namely: perceived space as private, visiting the space by choice, days visited, minutes spent, using the space for achievement, using the space for affiliation. We found main effect of perceived international-ness on using the space for achievement $F(1, 2296.81) = 16.87$, $p < .001$, and using the space for affiliation $F(1, 2347.58) = 99.98$, $p < .001$, but non-significant on all other 4 DVs. Also, we found significant two-way interactions of perceived international-ness and host orientation, and three-way interactions of perceived international-ness, host and home orientation, on two DVs, i.e., perceived space as private and visiting the space by choice. Further probing revealed that international students high on both host and home orientation perceived campus spaces as less private, $t(2482.45) = -3.59$, $p < .001$; international students high on host and low on home orientation visited campus spaces by choice, $t(2304.27) = 2.55$, $p = .011$, whereas international students low on both host and home orientations visited campus spaces not by their choice, $t(2297.72) = -2.76$, $p = .006$ (see Table 27, 28 and 29 at Appendix B).

in terms of acculturation orientation might affect their perception on campus spaces, at least in terms of perceived international-ness, which in turn affect their felt comfort at different parts of the campus.

General Discussion

The cross-sectional survey and longitudinal survey reported in this chapter aimed to (1) explore the role of social processes related to identification and group membership in supporting the well-being of international students on campus, (2) explore whether one's general sense of belonging on campus contribute to well-being, over and above social processes, and (3) examine patterns of social connection and place attachment as a function of individual differences in orientation towards the host culture versus culture of origin. The cross-sectionals survey ($n = 294$) served as a preliminary study in addressing these three aims, whereas the longitudinal study ($n = 174$) served to track international students' self-reported subjective experiences on campus space across their first semester of study.

The cross-sectional survey revealed one's general feelings of belonging on campus – as (1) a significant mediator of relationships between host orientation with personal self-esteem and satisfaction with life, and (2) the strongest predictor of well-being outcomes when compared to multiple group memberships and identification with other students (including international students). This partially supports our first hypothesis, which is that international students higher on host orientation will have higher sense of belonging on campus, higher identification as Exeter student, higher multiple group memberships, and thus better personal self-esteem, and greater life satisfaction. However, the longitudinal study provided limited support on this. Across the first semester, host orientation was only weakly associated to feelings of belonging on campus and did not link significantly to well-being outcomes. Despite that, the longitudinal study suggests that feelings of belonging on campus preceded the acquisition of group memberships.

Our second hypothesis, that international students higher on home orientation will feel more comfortable in campus spaces that reflect their identity as international students was supported by both the cross-sectional survey (in which international space was represented by INTO Building) and longitudinal study (in which the perceived international-ness was measured. The cross-sectional survey revealed that international students who were oriented to host culture experienced all campus spaces more positively except for the INTO Building, in which higher host orientation was associated with more discomfort in INTO Building. On the other hand, international students higher in home orientation and lower on host orientation experienced greater comfort in the INTO Building. Similarly the longitudinal study found that international students high on home orientation and low on host orientation felt more comfortable in campus spaces that were perceived as more international.

Implications

The observed patterns of host and home acculturation orientation patterns in the cross-sectional survey and longitudinal study is consistent with previous research in the field, that international students who are high on host orientation are associated with overall better well-being (Demes & Geeraert, 2014), higher satisfaction with life (Wang et al., 2015) and positive university belonging (Slaten et al., 2016). Here, we found evidence in the cross-sectional survey that feelings of belonging on campus is not only a significant mediator of relationships between host orientation with personal self-esteem and satisfaction with life, but also the strongest predictor of well-being outcomes when compared to multiple group memberships and identification with other students (including international students). This finding, though not supported by the longitudinal study, still adds on to the literature of place attachment, in which feelings of belonging on campus is truly a protective factor to international students' well-being outcomes. Also, our findings indicate that besides the 'social cure', that is the idea that group memberships are important to cope with life transitions (Jetten et al., 2009: Jetten et

al., 2012), sense of belonging on campus might be a stronger indicator for international students to cope with life transitions, and maybe even to obtain multiple group memberships. It could be that for international students, the feelings of belonging to a place/ space serve as the pre-requisite to connecting with students of other groups on campus.

Next, the present work also extends the research of acculturation orientations among international students and place attachment. Prior work on university students and sense of belonging has examined belonging in educational settings generally (e.g., Walton & Cohen, 2011), on campuses as a whole (e.g., Mulrooney & Kelly, 2020), or in relation to group-specific campus buildings (e.g., Kirby et al., 2020). The present work, according to our current knowledge at the point of this writing, might be one of the few that adopts larger-scale systematic explorations of the role of feelings of belonging (or felt comfort) on various campus spaces in relation to individual differences (i.e., acculturation orientations) of international students. We found that international students who are higher on host orientation generally find the idea of separate spaces (i.e., INTO Building) less comfortable and they instead self-reported more felt comfort in campus spaces that support their desired connections with the majority group. This further confirms that being in places that reflect one's acculturation orientations does contribute to one's well-being, or at least the felt comfort when one dwells in that particular space. This also indicates that there is a need to tease out the individual differences of international students' acculturation orientations when investigating their adaption to campus life to the point of cultivating sense of belonging on campus. Research that merely measures minority groups as a homogenous group is not enough, the individual differences (e.g., the combination of high versus low host and home acculturation orientations) is needed to examine the processes of minority groups (e.g., international students) develop feelings of belonging on campus.

Following that, our findings support the contention that the social properties of campus spaces (i.e., INTO Building stereotyped as a space owned by international students due to its function that is for international students to learn English, or certain campus spaces populated by more international students at that moment when international students themselves were in that particular campus space) do play a role in the felt comfort among international students, at least for those who were high on home orientation and low on host orientation. Literature on environmental psychology often emphasized the physical features (e.g., plants and murals, Felsten, 2009) and neglected the impact of the social properties of an environment. The studies in this chapter serve as empirical evidence that the social properties of an environment do matter, at least to international students in a UK campus who prefer own culture maintenance over assimilation with the host community. More specifically, the match of social properties of an environment and the individual's identity (i.e., acculturation orientation) resulted in more felt comfort among international students on campus. This further extends the research work on ambient belonging resulting from identity-environment match by Cheryan and colleagues (2009), and confirms that one's identity does interact with the social properties of environment (Morton et al., 2017) and contributes to one's well-being. Hence, research on identity-environment match is an important factor, specifically for minority groups such as international students in a UK campus, in developing place attachment.

Limitations and directions for future research

The present work intended to examine the role of acculturation orientations as a function of individual differences among international students, how this impacts on their subjective experiences on different campus spaces, and the well-being outcomes, together with identification and group membership factors. Our longitudinal study does not support the cross-sectional survey that feelings of belonging on campus is the strongest predictor when mediating the relationship between host orientation and well-being outcomes (i.e., personal self-esteem

and satisfaction with life). These inconsistencies between the two studies might be due to the cross-sectional study consisting of international students of all academic years on campus, whereas the longitudinal study consists of only international students in their very first semester on campus. Length of familiarity in the campus might impact international students' host orientation and feelings of belonging on campus, in relation to their levels of resilience and satisfaction with life. Future research could take into account the length of familiarity with campus spaces when examining similar variables and their predictive value on the well-being outcomes.

An additional limitation to the current research is that although we used 4 time-points with the aim of tracking and capturing the changes of acculturation orientations, feelings of belonging on campus, identification and group membership factors, only in the first semester of study, i.e., 14 weeks, however, the high degree of across time stability in these variables (as shown in the longitudinal study) indicates that it would be better to conduct the longitudinal study throughout the first academic year, i.e., 9 months. Future research that aims to examine the changes of international students' acculturation orientations, tracking of subjective experiences on various campus spaces, and identification and group membership factors, should be done longitudinally for the whole first academic year. With this, one might be able to detect the over-time changes in well-being outcomes. Particular attention could be focused on whether international students' feelings of belonging on campus predicts their acquisition of group memberships over-time, as indicated by the present work.

Conclusion

Individual differences in acculturation orientation undoubtedly shape the subjective experiences of international students on various campus spaces. Consistent with prior research on international students' acculturation orientations and adaptation to campus life, host orientation is the predictor of better well-being outcomes. The present work has established

that international students' host orientation is positively linked to feelings of belonging on campus, and feelings of belonging on campus might be a significant predictor of both well-being outcomes and acquisition of multiple group memberships. Following that, the social properties of an environment do play a role in impacting international students' felt comfort in space, and that identity-environment match resulted in more felt comfort. Despite the limitations stated, the findings reported here further highlight how individual differences of acculturation orientations have impacted the subjective experiences of different campus spaces, and that the social properties of an environment do have psychological effects for those who dwell there.

Chapter 5

General Discussion

The five studies in this thesis aimed to (1) establish the broad stereotypes about campus spaces in relation to international students at University of Exeter; (2) examine experimentally the consequences of being in majority versus minority spaces on the perceived restorativeness and academic performance of international students within stereotypical spaces, and how these consequences vary according to acculturation orientations, and; (3) examine international students' actual space usage on campus, the consequences of patterns of space usage for social identifications and individual well-being outcomes, and how the felt comfort and restorativeness experienced within specific campus space varies according to individual differences in acculturation orientations and the role of the space. In combination, the empirical work presented in this thesis paints a picture of international students' psychological experience of campus spaces in a British campus, and specifically of the factors shaping their feeling of belonging in the place they have come to study. This closing chapter first summarises the main findings from each study, and then reflects on their combined theoretical and practical meaning and points towards interesting directions for further study in this area.

Summary of main empirical findings

Study 1. Through this cross-sectional survey study ($n = 391$), we established a broad map of the campus on which subsequent studies were conducted. Important coordinates on this map were INTO Building (i.e., English language learning centre for international students) which was identified as a "minority-owned" space, and The Forum which was identified as a "majority-owned" space, especially in the eyes of majority students who seemed to minimise the presence of international students there. To the extent that British students did see

international students in The Forum, they also tended to describe them negatively, for example, as being exclusive.

In addition to identifying two key spaces that were explored in the subsequent studies, this survey also provided more detail to meanings attached to each of these spaces and the divergence in meanings across majority and minority groups. To international students, the primary purpose of campus spaces – including the INTO Building and The Forum – was achievement. British students, however, tended to describe the purpose of international spaces as in more affiliative (i.e., social) terms, and less in terms of achievement motives. This was true even when reflecting on international students occupying a clearly achievement oriented space like the Forum Library. Here majority students perceived international students' behaviour as affiliative and exclusive, especially to the extent that these majorities held an expectation that international students should integrate culturally. Though not conclusive in any way, these patterns suggest that the behaviour of international students might be seen as "out of place" when they appear in spaces also used by the majority.

Study 2 and 3. Two field experiments (Study 2: $n = 260$; & Study 3: $n = 244$) directly followed the campus map revealed in Study 1 and explored the consequences of being in the two focal spaces – INTO Building and The Forum – for international students experiences of restorativeness and academic performance. Following ideas about compatibility, or fit, as central to experiences of spaces, we considered individual differences in acculturation orientations – predicting that majority-owned spaces (The Forum) would be more fitting for international students higher in host orientation, whereas minority-owned spaces (INTO Building) would be more fitting for those higher on home orientation. The combined results of these studies were mixed. An internal meta-analysis (total $N = 618$, i.e., Study 2, 3 and MSc project combined) revealed that international students higher in home orientation did

experience the minority space as more restorative than those lower in home orientation, and as more restorative than the majority space.

However, international students who were higher in host orientation did not display any benefits from being in a 'majority space', and instead perceived both majority and minority spaces as more restorative than those lower in host orientation. There was also no cumulative evidence for benefits of predicted combinations of acculturation orientation and space for actual academic performance. Nevertheless, these findings highlight that (1) individual differences in acculturation orientation among international students, to a certain extent, do shape their experiences of learning spaces on campus, and (2) the social properties of space do, to a certain extent, have psychological consequences for those who inhabit them.

Study 4 and 5. A cross-sectional survey (Study 4; $n = 294$) revealed a similar pattern to previous experimental studies. Feelings of comfort within specific spontaneously used spaces again reflected a pattern of identity compatibility: Host-oriented international students reported experiencing more comfort in majority-owned spaces, whereas home-oriented international students reported experiencing more comfort in minority-owned spaces, and the INTO Building (the most socially distinctive space) was unique in the reactions it triggered. International students experienced particular discomfort in this space to the degree they were oriented towards the host culture, whereas they experience particular comfort in this space to the degree they were oriented towards their home culture.

Analyses of these data also revealed the surprising finding that more general feelings of belonging on campus were a stronger predictor of well-being outcomes (i.e., personal self-esteem and satisfaction with life, but not resilience) than factors more typically studied in the social psychological literature, specifically identification with other students (including international students) and membership in multiple groups on campus. This motivated the

longitudinal study to both probe this finding further and to explore the unfolding nature of experiences of place, social connections, and well-being across the first semester as an international student (Study 5; $n = 174$).

Analyses of the longitudinal data instead suggested a high degree of stability in acculturation orientations, feelings of belonging on campus, social connection variables, and well-being outcomes. As such, there is little evidence for causal, or reciprocal relationships among these variables. Despite that, Study 5 revealed that feelings of belonging on campus preceded the acquisition of group memberships among international students. Though not conclusive in any way, these patterns suggest that feelings of belonging on campus might be an important variable that mediates the behaviour of international students in terms of identification and group memberships on campus. In this dataset, we again saw evidence that international students felt more comfortable in specific campus spaces that matched their identities. Campus spaces that were perceived as more international were also the ones that were experienced as more comfortable, a pattern that was especially true for international students who were simultaneously high on home orientation and low on host orientation – again confirming our broad expectation that identity compatible spaces are experienced more positively.

Theoretical and practical implications

Overall, the pattern of results across studies converge to suggest that comfort on campus matters to international students – a group that are both navigating their way through an unfamiliar physical environment and a new socio-cultural environment that might be either exciting, challenging, or both. The studies in this thesis suggest that this felt comfort is enhanced when international students find themselves in environments that match their identity-based goals, as defined by acculturation orientations. In the section that follows, three

theoretical areas from which this thesis drew – cross-cultural psychology, social psychology, and environmental psychology, shall be discussed.

Implications for research on acculturation orientations in educational settings

Generally, research on acculturation orientations in educational settings has established that international students who are higher on host orientation showed better overall adaptation and well-being in comparison to those higher on home orientation who may display impaired overall well-being (Demes & Geeraert, 2014; Wang et al., 2015; Wei et al., 2012). However, many of these studies only account for international students' acculturation orientations and neglect the attitudes of the larger society, or the local contexts that they are embedded in. Taking a wider view raises interesting questions about how host society expectations shape, and interact with international students own orientations and the outcomes based on these. For example, does the host community expect international students to assimilate (i.e., melting pot), or separate (i.e., segregation), or integrate (i.e., multiculturalism), or marginalize themselves (i.e., exclusion) from the host community? And, what does this mean for the strategies international students follow as they navigate the pressures, and possible stressors, of adapting themselves within the host community?

Research has established that the mismatch between expectations of host community and minority's (i.e., immigrant) acculturation strategy preference resulted in negative outcomes such as more bias among the minority towards the host/ majority members (Zagefka & Brown, 2002). Besides that, research has revealed that minority members' perception of majority members' acculturation expectations do affect their own acculturation strategies for example, perceiving that majority members support culture maintenance supports preferences for culture maintenance, whereas perceiving majority group members to expect more contact between groups supports preferences for contact with them (Zagefka et al., 2011). Similar patterns might

apply to international students and home students in a campus setting. As in broader society, here some match between home students' acculturation expectations and international students' acculturation preferences might result in the most positive outcomes.

In Chapter 2, we found that British students expected international students to both assimilate and simultaneously maintain their own culture (and both orientations were positively correlated, suggesting perceived alignment between these goals) whereas international students viewed assimilation to the host culture and maintenance of own culture as opposing directions (i.e., these were negatively correlated). Although it is beyond our data to say why the possibility for alignment between host and home orientations might have been perceived differently for majority and minority groups, the discrepancy between perspectives seems as though it could be consequential. For example, divergent perspectives might be behind international students' tendencies to seek spaces where they can be together and from British students' perception of that in so doing, international students are behaving exclusively on campus. Hence, more research on acculturation orientations in education settings that considers both host students' acculturation expectations and international students' own acculturation preference should be conducted.

A related conceptual point that is alluded to across this thesis is that competing expectations between what minority individuals want, versus the expectation of individuals from the dominant host culture, are played out through how individuals are perceived and evaluated in place. For example, despite their generally multicultural expectations, British students perceived international students who clustered together in specific spaces as being "exclusive" and they also tended to describe the use of spaces that cater to the minority as being guided by affiliative rather than achievement motivations. Said differently, whereas cultural maintenance and host culture engagement were compatible in the minds of British students, in-practice incompatibility was revealed through the negative or dismissive evaluation of minority

individuals who gather together in place. However, the studies in this thesis did not examine this in detail, hence more research could be done along these lines to further investigate these expectations and in-practice incompatibility.

On a practical note, university management should take these differences in perspective into account if they want to design a campus that is both inclusive of minority groups, but also one that fosters positive interactions between groups on campus. From a space-focussed perspective, university management could create spaces that both allow students to live out their valued identities (which might include engaging with their culture of origin) without creating a perception of segregation in the eyes of the majority students. For example, the centre for international students to learn English, i.e., INTO Building could be advertised as a hub in knowing the British culture (that includes learning English language), in which British students are welcome into that building, thus decreasing segregation between international and British students. The café at INTO Building could still sell international dishes and snacks, allowing international students to engage with their culture of origin. In addition, sensitivity to the expectations and preferences of majority group and international students should be emphasized so that opportunities for contact on campus become more intentional. For example, if international students are more aware of British students' expectation of them to maintain their own culture while also engaging with the majority community, international students might feel more affirmed in their identities and freer to express themselves while taking the risks of engaging across cultures, for example through speaking English with British students on campus. Hence, integration of international students into the host community can be achieved.

Implications for research on experiences of socially-marked spaces

Social psychological research has generally emphasised the importance of belonging in educational settings (Walton & Cohen, 2007), and recent studies have demonstrated how group-specific spaces (Kirby et al., 2020) or other features of the physical environment (Cheryan et al., 2009) can convey belonging to individuals from minority groups. However, to date, there is little exploration within this literature into the role of individual differences in complicating how and where people experience belonging. Said differently, while it is important for women (Cheryan et al., 2009) and ethnic minorities (Kirby et al., 2020) to achieve a sense of belonging on campus, not all women and not all minorities will seek this in the same places. This thesis takes a first, but necessary step in this direction by considering individual differences among international students in terms of their acculturation orientation. Across studies the findings show that these individual differences matter for which spaces on campus are perceived as restorative and comfortable to the individual.

However, while we observe a broad pattern of fit between individual acculturations and the spaces that support these, across studies different acculturation orientations were 'primary' in driving this fit: interactive patterns in Studies 2 and 3 (Chapter 3) were dominated by home orientation whereas interactive patterns in Studies 4 and 5 were dominated by host orientation (albeit in combination with home orientation also). This could partly be due to Studies 2 and 3 focused on INTO Building, a space on campus that is socially-marked as exclusive for international students to learn English academic writing and bridging courses to degree programmes on campus, in which, logically, more attractive to international students higher on home orientation. On the other hand, Studies 4 and 5 focused on spontaneously-used spaces on campus. Given that campus as a whole, as well as the majority of spaces on it, reflect the dominant culture, spontaneous use of space on campus likely reflects some desire to engage with that host culture. Though there are differences across the experimental and self-report

studies, the data nonetheless consistently show that the experience of place on campus is driven by two factors: (1) individual differences in acculturation orientation, and (2) the social parameters of spaces on campus.

A focus on individual differences also has practical implications for space design and management on campus. The designation of minority spaces on campus are guided by an intention to benefit members of the minority and to support their well-being and educational outcomes. But, not all minority individuals want the same things. For example, one should not expect that all members in the minority group would respond equally positively to events held for them in minority campus spaces, as some might find the minority space as uncomfortable and exclusive to the majority community. Of course, one could argue that minority group members have the choice of engaging (or not) with these spaces. Reflecting on this, besides providing minority spaces on campus, the provision of alternative spaces that allows minority individuals to integrate (not just assimilate) with the dominant group should be considered. This is important because these individual preferences contribute diversity perspectives within the minority group, and the university management should not overlook these when considering the role of environmental features that impact on minority experiences.

The broader point about variation in the experience of belonging applies to spaces as much as individuals. Prior work in academic contexts has considered this very broadly – for example in relation to academic life (e.g., Walton & Cohen, 2011), campus as a whole (e.g., Mulrooney & Kelly, 2020), or specific group-designated buildings (e.g., Kirby et al., 2020). Yet, the findings reported in Chapter 4 suggest that a variety of spaces can contribute to felt belonging, and that for minority students any space that is perceived as having a higher concentration of similar others can be significant in this regard. The present work, to the best of our knowledge, is one of very few studies systematically exploring the role of both

individual variation and variation across spaces in the experience of comfort on campus for international students.

On a practical note, when helping minority students on campus adapting to university life, instead of assessing their sense of belonging on campus as a whole as an indicator of how well they have adapted, it might be helpful to consider more fully the role of smaller spaces and their role in supporting micro-experiences of belonging. This would not only provide a more accurate picture of the role of place in felt belonging but would be more informative when assisting the student to better adapt and cope with university life. It might be difficult for a struggling student to imagine fully belonging everywhere on campus, but if they are able to find spaces where they feel they do belong on campus, and that they can retreat to, this might help them cope with more general feelings of alienation or the feeling of being out-of-place at other times. Furthermore, micro-experiences of belonging in specific campus spaces might act as a bridge to wider engagement with campus life and better adaptation.

Since Chapter 2 revealed that international students (generally) perceived campus for achievement purposes, one method to integrate both host and international students on campus is to organize knowledge or skills-based activities on campus spaces that are inclusive of both groups. This is partly because both groups of students might be conscious of the exclusiveness of minority space on campus, and anxious of their respective differences in terms of culture and language. Majority spaces on campus could play a stronger role in this by being inclusive and by taking in the achievement expectations of both groups towards that campus space and facilitating integration into the shared community of students. Reciprocally, minority spaces on campus could play the role of motivating and giving comfort to international students and bridging their engagement to the wider campus and community it represents. The university management needs to be aware of the different roles that majority versus minority spaces are contributing to the student community on campus and to manage these in ways that are

complementary. For example, if international students are formally positioned at minority spaces for the whole academic year, the possibility of them identifying with the host community would be minimized. Hence, considerations of the social properties of campus spaces impacting the social processes of international students are important in educational settings.

Implications for research on restorative spaces

Environmental psychologists have long been interested in the role of spaces in supporting rest, relaxation, and recovery from stress. Yet, research on restorative spaces priorities the physical properties of environments over their social properties, and explanations have focused on the capacity for environments to support visual processes of "soft fascination" as key to restoration (Kaplan, 1995; Kaplan & Kaplan, 1989). Reciprocally, while social psychologists have emphasised the importance of social factors in stress-reduction, recovery, and well-being (Jetten et al., 2009; Jetten et al., 2012), few studies have considered these processes in relation to physical environments. However, recent work at the interface of social and environmental psychology has bridged these perspectives and demonstrated the importance of identity compatibility in shaping environmental restoration (e.g., Morton et al., 2017; Ysseldyk et al., 2016).

The results of the studies presented in this thesis are very much in line with that idea: Chapter 3 showed how environment-identity fit contributes to perceived restorativeness within space, and Chapter 4 shows how being in spaces populated by similar others can contribute to feelings of comfort. These effects emerged even when the spaces in question were from the same era of campus development and shared many architectural features (e.g., natural light and materials, organic shapes). Social properties of spaces are often conveyed through things that are more diffuse and less tangible than lighting and plants – not just the people that are there,

but also sounds (e.g., of people talking in different languages) and smells (e.g., of a café that sells international food). Perhaps this is why previous studies have often overlooked the importance of social parameters in structuring restorative experiences – physical environmental parameters are more obvious and more amenable to simple variation (e.g., Felsten, 2009; McFarland et al., 2008). This thesis addresses this gap in literature by taking into account the social properties of learning spaces in a UK campus.

Although the studies contained in this thesis do show some evidence for identity compatibility in shaping restorative experiences of space, it is important to note that this is limited to self-report feelings, whereas the literature on restorative environments priorities cognitive processes related to attention capacities. We tried to capture more concrete outcomes through measures of academic performance in spaces, but these did not reveal complementary patterns to self-reported feelings. One reason for this could be that the tests used in the field experiments were too broad to capture the specific outcomes specified by attention restoration theory – for example directed attentional focus. Future studies could therefore utilize tests such as backward digit span task (e.g., Berman et al, 2012; Kuo, 2001; Ottosson & Grahn, 2005) or sustained attention to response task (SART; Berto, 2005) to capture cognitive capacity, working memory, and attentional that might be directly affected by the restorativeness one experiences within a space. Another reason for the lack of effects beyond self-reported outcomes is also undoubtedly due to the reality of researching actual spaces. When conducting field experiments, a variety of factors necessarily confound the designation of spaces solely in terms of their social meaning, including crowding, background noise levels, and position of the testing seats. This makes precise tests harder to achieve in these settings than in pure lab experiments (e.g., in which participants are shown pictures of different places and asked to imagine themselves there). To understand the complex dynamics of real spaces involved multiple measures of physical as well as social parameters, and complex analyses to

disentangle these. The studies described here represent a first attempt at this, but more is needed to truly further our understanding of the interplay between social and physical environmental features and what this means for restorative experiences.

As already noted, the social psychological literature has tended to highlight the importance of social connections and group memberships, more than spaces or places, to coping with important life transitions (Haslam, Haslam, Jetten, Cruwys, & Steffens, 2021; Jetten, Haslam, Haslam, & Branscombe, 2009; Jetten, Haslam, & Haslam, 2012). Yet, Chapter 4 of this thesis found at least some evidence that feelings of belonging on campus is an important predictor of international students' well-being outcomes, and that this might be more important than the acquisition of group memberships or identification with other students. Again, this highlights the importance of considering both place-related and social concerns as foundational for well-being among international students. While it is possible for a more complex interplay among between space-related and social experiences – for example whereby finding subjectively comfortable spaces facilitates connections with others, and vice versa that connections with others draws the individual into specific spaces – evidence for dynamic relationships was not revealed in the longitudinal study reported in Chapter 4. Nonetheless, it would seem fruitful for future research to examine whether and how spatial and social belonging on campus contribute to each other and to individual well-being outcomes.

Conclusion

This thesis opened with the quote "to be human is to live in a world that is filled with significant places: to be human is to have and know your place" (Relph, 1976, p.1). The idea reflected in this quote resonates well with the experiences of international students who have left their familiar home environment to seek new experiences and education in unfamiliar places far from home. Geographical movement can be both affirming and challenging as

international students struggle to find their place in both on campus and within the wider culture. This thesis examined the role, and highlights the importance of specific campus spaces in supporting felt restoration and belonging among members of this group. Specifically, a series of experimental field studies, cross-sectional and longitudinal surveys show how the social properties of spaces – both symbolically and in terms of who else is present within the space – combine with individual differences in acculturation orientation to shape individual experiences.

Overall, this thesis provides further evidence that compatibility between environments and one's identity is key to positive experiences of place. Building on this insight, further research should examine whether the effects of being in identity-compatible spaces extends beyond felt restoration, and feelings of belonging on campus, to other indicators and the role of identity-compatible spaces in supporting process of interaction and social inclusion beyond individual feelings. By combining simultaneous emphasis on the social and physical properties of space, intentionally recognizing identity-compatible spaces, and acknowledging individual differences among minority (and majority) group members, we can further (and better) facilitate the process of cultivating a sense of place attachment to university campuses, which should eventually result in better adaptation and well-being. Ultimately, all students including those from minority or different cultural backgrounds should be supported to flourish and live out their best selves in places with which they can identify and feel a sense of ownership and belonging.

Appendices

Appendix A

Study 1 full survey item list

<u>Instructions and full items (for British students)</u>

We are also interested in how different groups of people feel about each other. You are a British student. We would like to know a little bit more about your thoughts, feelings, and experiences with other students who are not British (i.e., international students). For each of the following statements, please indicate how much you personally disagree or agree with that statement using the scale provided.

1. International students should feel at ease with British people.
2. International students should like British culture and do their best to be part of it.
3. International students should feel comfortable being with people from the United Kingdom.
4. International students should want to live in an area where there are mainly British people.
5. International students should make an effort to improve their English.
6. International students should feel comfortable speaking English with their friends.
7. International students should want to speak with British people and know more about them.
8. International students should want to learn more things about British culture.
9. International students should want to "hang out" with people from their own country.
10. International students should want more friends of their own nationality.
11. International students should not wish to go back to their own country. [a]
12. It is important to international students to preserve their own cultural heritage.
13. International students should want to live in an area where there are mainly people from their nationality.
14. International students should value the culture from their own country.
15. International students should use their own national language in their daily life.
16. International students should enjoy going to gatherings or parties held by people of their own nationality.
17. International students should find their own culture interesting.

[a] = reverse scoring

<u>Instructions and full items (for international students)</u>

We are also interested in how different groups of people feel about each other. You are an EU/ international student. We would like to know a little bit more about your thoughts, feelings, and experiences with other students who are British. For each of the following statements, please indicate how much you personally disagree or agree with that statement using the scale provided.

1. I feel at ease with British people.
2. I like British culture and I will do my best to be part of it.
3. I feel uncomfortable being with people from the United Kingdom. [a]
4. I would like to live in an area where there are British people.
5. I make an effort to improve my English.
6. I don't feel comfortable to speak English with friends. [a]
7. I want to speak with British people and know more about them.

8. I don't want to learn more things about the British culture. [a]
9. I want to "hang out" with people from my country.
10. I would like to have more friends from my own nationality.
11. I have no wish to go back to my own country. [a]
12. It is important to me to preserve my own cultural heritage.
13. I would like to live in an area where there are only people from my nationality.
14. The culture from my own country is something that I value.
15. If I could I would only use my own national language in my daily life.
16. I enjoy going to gatherings or parties held by people of my own nationality.
17. The culture of my own country is not interesting. [a]
[a] = reverse scoring

Table 1b. Study 2 – correlation between first and second coder

Venue/ items	Before discussion	After discussion	Disagreement
Forum			
Purpose achievement ($n = 98$)	$r = .937, p < .001$	$r = 1.000, p < .001$	none
Purpose_affliation ($n = 98$)	$r = .895, p < .001$	$r = .979, p < .001$	ID 290 - communal space - (2nd coder - means nothing) 3rd person - affliation
Description_noise ($n = 89$)	$r = .621, p < .001$	$r = 1.000, p < .001$	none
Description_exclusive ($n = 89$)	$r = .631, p < .001$	$r = 1.000, p < .001$	none
Description_agency ($n = 89$)	$r = .814, p < .001$	$r = 1.000, p < .001$	none
Description_communal ($n = 89$)	$r = .707, p < .001$	$r = .978, p < .001$	ID 173 - social space - (1st coder - vague) 3rd person - communal
Forum Library			
Purpose_achievement ($n = 229$)	$r = .911, p < .001$	$r = 1.000, p < .001$	none
Purpose_affliation ($n = 229$)	$r = .749, p < .001$	$r = 1.000, p < .001$	none
Description_noise ($n = 222$)	$r = .827, p < .001$	$r = 1.000, p < .001$	none
Description_exclusive ($n = 222$)	$r = .621, p < .001$	$r = 1.000, p < .001$	none
Description_agency ($n = 222$)	$r = .770, p < .001$	$r = 1.000, p < .001$	none
Description_communal ($n = 222$)	$r = .767, p < .001$	$r = 1.000, p < .001$	none
INTO Building			
Purpose_achievement ($n = 273$)	$r = .786, p < .001$	$r = 1.000, p < .001$	none
Purpose_affliation ($n = 273$)	$r = .883, p < .001$	$r = 1.000, p < .001$	none

Description_noise (*n* = 256)	*r* = .402, *p* < .001	*r* = 1.000, *p* < .001	none
Description_exclusive (*n* = 256)	*r* = .751, *p* < .001	*r* = 1.000, *p* < .001	none
Description_agency (*n* = 256)	*r* = .866, *p* < .001	*r* = 1.000, *p* < .001	none
Description_communal (*n* = 256)	*r* = .428, *p* < .001	*r* = 0.979, *p* < .001	ID 366 - helpful - (1st coder - communal) 3rd person - communal

Table 2 – Frequency answers on "Where (on campus) do you find, or would you expect to find groups of international students?"

Space on campus	Frequency (*n* = 391)	Percentage (%)
Accommodation	13	3.32
All areas/ everywhere	18	4.60
Amory	10	2.56
Arabic Building/ Islamic Studies	3	0.77
Birks Grange, Lafrowda	8	2.05
Business School	71	18.16
Café, coffee shops, canteen	14	3.58
Classroom, lectures, computer rooms	9	2.30
Cornwall House, Grove	14	3.58
Costa	31	7.93
Devonshire House, Student Guild	25	6.39
Duryard	12	3.07
Forum	110	28.13
Forum Library	232	59.34
Great Hall	4	1.02
Gym	8	2.05
Harrison	2	0.51
Innovation Centre	1	0.26
INTO Building	261	66.75
LaTouche	5	1.28
Market Place	2	0.51
Old Library	2	0.51
Peter Chalk	2	0.51
Pieminister	3	0.77
Pret a Manger	19	4.86
Quad @ St. Lukes	1	0.26
Queens Building	9	2.30
Ram	13	3.32
Sports centre, sports park	10	2.56
Terrace	12	3.07
WSL	3	0.77

Table 3. Chi-square tests between British students and international students on perception of space, the purpose of space, and descriptions of international students in the space.

	% British students	% International students	X^2 (p value)	Phi
The Forum (n = 388)	62 / 269 = 23.05%	42 / 119 = 35.29%	5.697 (p = .017)	0.127
Purpose of The Forum – achievement (n = 89)	18 / 51 = 35.29%	21 / 38 = 55.26%	2.763 (p = .096)	0.199
Purpose of The Forum – affiliation (n = 89)	31 / 51 = 60.78%	16 / 38 = 42.11%	2.345 (p = .126)	- 0.185
Descriptions of students Forum – exclusive (n = 81)	10 / 47 = 21.28%	1 / 34 = 2.94%	4.197 (p = .021)	- 0.264
Descriptions of students Forum – noisy (n = 81)	9 / 47 = 19.15%	12 / 34 = 35.29%	1.903 (p = .168)	0.182
Descriptions of students Forum – agency (n = 81)	28 / 47 = 59.57%	14 / 34 = 41.18%	1.989 (p = .158)	- 0.182
Descriptions of students Forum – communal (n = 81)	24 / 47 = 51.06%	12 / 34 = 35.29%	1.400 (p = .237)	- 0.157
Forum Library (n = 381)	160 / 265 = 60.38%	63 / 116 = 54.31%	0.986 (p = .321)	- 0.057
Purpose of Forum Library – achievement (n = 206)	135 / 146 = 92.47%	57 / 60 = 95.00%	0.124 (p = .725)	0.046
Purpose of Forum Library – affiliation (n = 206)	13 / 146 = 8.90%	6 / 60 = 10.00%	0.000 (p = 1.000)	0.017
Descriptions of students Forum Library – exclusive (n = 201)	14 / 138 = 10.14%	4 / 63 = 6.35%	0.370 (p = .439)	- 0.062
Descriptions of students Forum Library – noisy (n = 201)	15 / 138 = 10.87%	6 / 63 = 9.52%	0.002 (p = .967)	- 0.020
Descriptions of students Forum Library – agency (n = 201)	120 / 138 = 86.96%	55 / 63 = 87.30%	0.000 (p = 1.000)	0.005
Descriptions of students Forum Library – communal (n = 201)	15 / 138 = 10.87%	8 / 63 = 12.70%	0.019 (p = .889)	0.027
INTO Building (n = 391)	182 / 272 = 66.91%	78 / 119 = 65.55%	0.022 (p = .883)	-0.013
Purpose of INTO Building – achievement (n = 249)	120 / 174 = 68.97%	64 / 75 = 85.33%	6.455 (p = .011)	0.171

Purpose of INTO Building – affiliation (n = 249)	67 / 174 = 38.51%	15 / 75 = 20.00%	7.310 (p = .007)	-0.181
Descriptions of students INTO Building – exclusive (n = 236)	47 / 165 = 28.48%	16 / 71 = 22.54%	0.620 (p = .431)	- 0.062
Descriptions of students INTO Building – noisy (n = 236)	21 / 165 = 12.73%	7 / 71 = 9.86%	0.164 (p = .685)	- 0.041
Descriptions of students INTO Building – agency (n = 236)	105 / 165 = 63.64%	43 / 71 = 60.56%	0.091 (p = .763)	- 0.029
Descriptions of students INTO Building – communal (n = 236)	44 / 165 = 26.67%	15 / 71 = 21.13%	0.544 (p = .461)	- 0.059

Table 4. Correlational analyses of acculturation attitudes between participants with British status and international status on purpose of space and descriptions of international students in those spaces.

Category	Participants with British Status			Participants with International Status		
	Number of responses, n	British-Host	British-Home	Number of responses, n	International-Host	International-Home
Forum-achievement	51	- 0.140 (p = .328)	0.105 (p = .463)	38	0.023 (p = .892)	- 0.133 (p = .425)
Forum-affiliation	51	0.026 (p = .856)	0.026 (p = .858)	38	0.206 (p = .215)	- 0.074 (p = .659)
Forum-exclusive	47	- 0.002 (p = .992)	0.135 (p = .365)	34	0.118 (p = .507)	- 0.068 (p = .702)
Forum-noise	47	- 0.024 (p = .871)	- 0.131 (p = .378)	34	- 0.230 (p = .191)	0.153 (p = .388)
Forum-agency	47	0.219 (p = .140)	0.231 (p = .118)	34	- 0.135 (p = .446)	0.254 (p = .148)
Forum-communal	47	0.089 (p = .551)	0.063 (p = .676)	34	0.077 (p = .666)	0.219 (p = .213)
Forum Library-achievement	146	- 0.152 (p = .067)	- 0.027 (p = .745)	60	- 0.024 (p = .855)	0.081 (p = .537)
Forum Library-affiliation	146	0.198 (p = .017)	- 0.016 (p = .846)	60	0.193 (p = .141)	0.082 (p = .532)
Forum Library-exclusive	138	0.208 (p = .014)	- 0.231 (p = .007)	63	0.071 (p = .581)	- 0.094 (p = .461)

Forum Library-noise	138	0.127 (*p* = .137)	0.060 (*p* = .482)	63	0.140 (*p* = .273)	0.151 (*p* = .238)
Forum Library-agency	138	- 0.150 (*p* = .078)	- 0.018 (*p* = .836)	63	0.292 (*p* = .020)	0.045 (*p* = .724)
Forum Library-communal	138	0.056 (*p* = .513)	- 0.068 (*p* = .425)	63	- 0.010 (*p* = .936)	0.006 (*p* = .960)
INTO Building-achievement	174	- 0.085 (*p* = .262)	0.008 (*p* = .912)	75	0.251 (*p* = .030)	0.248 (*p* = .032)
INTO Building-affiliation	174	0.053 (*p* = .488)	0.027 (*p* = .728)	75	0.038 (*p* = .748)	- 0.100 (*p* = .392)
INTO Building-exclusive	165	0.056 (*p* = .476)	- 0.112 (*p* = .151)	71	0.147 (*p* = .220)	- 0.003 (*p* = .981)
INTO Building-noise	165	0.129 (*p* = .099)	0.099 (*p* = .206)	71	0.081 (*p* = .503)	- 0.175 (*p* = .144)
INTO Building-agency	165	- 0.069 (*p* = .376)	0.002 (*p* = .983)	71	- 0.099 (*p* = .413)	0.062 (*p* = .610)
INTO Building-communal	165	0.070 (*p* = .375)	0.039 (*p* = .618)	71	- 0.012 (*p* = .924)	- 0.132 (*p* = .271)

Appendix B

Study 4 full survey item list

First, take a moment to think back over the last 7 days. Over the last week, where on campus have you been? Excluding your own accommodation, what are the top 5 venues on campus where you have spent most of your time?

1. text box: _____(name a space)
   (a) How frequently did you visit this space in the last 7 days? [set for them 7 days max]
   (b) For each occasion that you were in that space, approximately how long (minutes) did you spend there?
   (c) What was the main purpose?
   (d) I go to this space mainly because:
       I had to vs I choose to (1-7 point scale)
   (e) When I think about this space, I see it mainly as:
       A private space *(i.e., somewhere I need permission to go)* vs
       A public space *(i.e., somewhere I can go whenever I choose to without asking permission)*
       (1-7 point scale)
   (f) When I am in this space, I feel

unwelcome vs welcome
uncomfortable vs comfortable
tense vs relaxed
confused vs certain
able to do things that are important to me
able to be myself
(1-7 point scale)

2. text box: _____(name a space) repeat (a) to (f) above
3. text box: _____(name a space) repeat (a) to (f) above
4. text box: _____(name a space) repeat (a) to (f) above
5. text box: _____(name a space) repeat (a) to (f) above

Thinking about your experience on campus in general, to what extent do you agree or disagree with the following statements.
Identification with campus (adapted from Hartig et. al., 1997 PRS scale)
1. In general, I like spending time on campus.
2. In my spare time, I often choose to be somewhere around campus.
3. In my spare time, I prefer to be in places other than on campus. (R)
4. In general, I feel a sense of belonging on campus.
5. In general, I feel "at home" on campus.
6. In general, when I am on campus, I feel like I "fit in".
7. In general, I know my way around campus.
8. In general, sometimes I get lost on campus. (R)
9. It is easy for me to form a mental map of the campus as a whole.

Now, take a moment to think about the groups you belong to on campus and the people you spend time with, then answer the following questions.
Multiple identities (Chang et. al., 2016)
1. I belong to lots of different groups at the university.
2. I join in the activities of lots of different groups on campus.
3. I am friendly with people in lots of different groups at this university.
4. I have strong ties with lots of different groups of people on campus.

Think about your social network here at the University of Exeter.
What percentage of the people are in it (total up to 100%).
1. British people
2. People from my home country
3. Other international students who are not from my home country

As an international student, how do you feel treated by others on campus? Please indicate the degree to which you agree or disagree with the following statements.
Perceived discrimination (adapted from Gartska, et. al., 2004)
1. I feel like I am personally treated differently to others because of my status as international student.
2. I have been deprived of the opportunities that are available to others because of my status as international student in University of Exeter.
3. International students are victimised at University of Exeter.
4. International students are discriminated against at the University of Exeter.

5. As an international student, I feel respected at the University of Exeter. (R)
6. As an international student, I feel included at the University of Exeter. (R)
7. As an international student, I feel accepted at the University of Exeter. (R)

Think about how you feel right now, then answer the following questions:
Resilience scale (BRS) (Smith, et. al., 2008)
1. I tend to bounce back quickly after hard times.
2. I have a hard time making it through stressful events. (R)
3. It does not take me long to recover from a stressful event.
4. It is hard for me to snap back when something bad happens. (R)
5. I usually come through difficult times with little trouble.
6. I tend to take a long time to get over set-backs in my life (R).

Personal self-esteem (Haslam, et. al., 2005)
1. On the whole, I am satisfied with myself.
2. At times, I think I am no good at all. (R)
3. I feel that I have a number of good qualities.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of. (R)
6. I certainly feel useless at times. (R)
7. I feel that I'm a person of worth, at least on an equal plane with others.
8. I wish I could have more respect for myself. (R)
9. All in all, I am inclined to feel that I am a failure. (R)
10. I take a positive attitude toward myself.

Satisfaction with life (SWL) (Diener, Emmons, Larsen, & Griffin, 1985)
1. In most ways my life is close to ideal.
2. The conditions of my life are excellent.
3. I am satisfied with life.
4. I currently have the important things I want in life.
5. I do not want to change anything about my life right now.

How do you feel about being a student at the University of Exeter?
Group-Level Identification with University of Exeter (adapt from Leach et al., 2008)
1. I feel a bond with this university.
2. I feel solidarity with this university.
3. I feel committed to this university.
4. I am glad to be a student in this university.
5. I think that Exeter university students have a lot to be proud of.
6. It is pleasant to be an Exeter university student.
7. Being an Exeter university student gives me a good feeling.
8. Being an Exeter university student is something I often think about.
9. Being an Exeter university student is an important part of my identity.
10. Being an Exeter university student is an important part of how I see myself.

How do you feel about being an international student at the University of Exeter?

Group-Level Identification with International Students in University of Exeter (adapt from Leach et al., 2008)
1. I feel a bond with international students.

2. I feel solidarity with international students.

3. I feel committed to international students.

4. I am glad to be an international student.

5. I think that international students have a lot to be proud of.

6. It is pleasant to be international students.

7. Being an international student gives me a good feeling.

8. I often think about the fact that I am an international student.

9. The fact that I am an international student is an important part of my identity.

10. Being an international student is an important part of how I see myself.

Please indicate how much you personally disagree or agree with that statement using the scale provided.

Two Acculturation Dimensions Scale (Ramos, et. al., 2016)
1. I feel at ease with British people.
2. I like British culture and I will do my best to be part of it.
3. I feel uncomfortable being with people from the United Kingdom. [R]
4. I would like to live in an area where there are British people.
5. I make an effort to improve my English.
6. I don't feel comfortable to speak English with friends. [R]
7. I want to speak with British people and know more about them.
8. I don't want to learn more things about the British culture. [R]
9. I want to "hang out" with people from my country.
10. I would like to have more friends from my own nationality.
11. I have no wish to go back to my own country. [R]
12. It is important to me to preserve my own cultural heritage.
13. I would like to live in an area where there are only people from my nationality.
14. The culture from my own country is something that I value.
15. If I could I would only use my own national language in my daily life.
16. I enjoy going to gatherings or parties held by people of my own nationality.
17. The culture of my own country is not interesting. [R]

Finally, we need to know something about you.

Demographic details:
1. What is your age?
2. What is your gender? (male, female, other/ prefer not to say)
3. What is your ethnicity?
4. What is (are) your nationality (nationalities)?
5. What is your mother tongue(s)?
6. Are you religious? (If yes, do you practice your religion?)
7. What is your programme of study?
8. At which level of programme are you? (Undergraduate/ postgraduate)
9. How long, in months, have you been in the UK?
10. Is this your first visit to the UK? (If it is not your first visit, how many times have you previously visited the UK?)
11. What is your relationship status? (single/ married/ in a relationship/ others)
12. What kind of accommodation are you living in during term time? (university accommodation/ staying with family/ private rental/ others)
13. How many British friends do you have (rough estimate)?
14. Are you active in sports/ clubs/ societies in University of Exeter? (If yes, what sports/ clubs/ societies are you active in?)
15. Do you join any other oganizations in the UK (outside University of Exeter)?
16. Do you have any intentions to work in the UK after completing your studies?

If you are distressed by any of the issues raised in this survey, needed, you can access help and advice via:

(i) Wellbeing Services
https://www.exeter.ac.uk/wellbeing/contact/

(ii) Student Guild Advice Unit
https://www.exeterguild.org/advice/

(iii) International Student Support
https://www.exeter.ac.uk/internationalstudents/

(iv) Residence Life Team
http://www.exeter.ac.uk/accommodation/students/currentstudents/residencelifeteam/

(v) Chaplaincy
https://www.exeter.ac.uk/chaplaincy/

We thank you for your time spent taking this survey.
Your response has been recorded.

Table 19 - Mixed model analyses. Type III tests of fixed effects upon other interested variables (Study 4).

	Private vs Public		By Choice		Days Visited		Minutes Spent		Achievement		Affiliation	
	df 2	*F*	*df* 2	*F*	*df* 2	*F*	*df* 2	*F*	*df* 2	*F*	*df* 2	*F*
Space	1195.52	42.59***	1204.14	140.46***	1013.66	9.97***	1006.87	22.99***	1186.46	185.09***	1204.93	14.59***
Host	1184.01	0.27	1231.56	5.93*	1108.96	0.87	1021.04	0.7	1206.16	1.38	1207.17	0.87
Home	1188.17	0.04	1076.07	1.09	825.12	2.02	856.75	1.01	1153.44	0.53	1066.6	0.03
Space x Host	1182.53	0.79	1216.09	0.98	1043.66	0.91	1004.46	1.26	1196.92	1.27	1193.15	1.1
Space x Home	1206.28	0.65	1146.26	2.32*	914.32	0.76	937.45	0.82	1180.21	0.35	1142.07	0.98
Host x Home	1236.02	0.17	1243.72	1.42	1103.89	0.19	1051.17	0.01	1247.99	2.1	1234.61	7.35**
Space x Host x Home	1165.81	0.45	1209.56	1.69	1078.55	1.16	1020.38	0.49	1185.27	0.58	1170.33	1.39

Note: *p <.05, **p <.01, ***p <.001

Study 5 full survey item list

Online pre-assessment
(first page) Informed Consent

As an EU or international student in University of Exeter, we are interested to know your experience on campus. Please indicate how much you personally disagree or agree with that statement using the scale provided.

Two Acculturation Dimensions Scale: (*Strongly disagree* 1 2 3 4 5 6 7 *Strongly agree*)
1. I feel at ease with British people.
2. I like British culture and I will do my best to be part of it.
3. I feel uncomfortable being with people from the United Kingdom. [R]
4. I would like to live in an area where there are British people.
5. I make an effort to improve my English.
6. I don't feel comfortable to speak English with friends. [R]
7. I want to speak with British people and know more about them.
8. I don't want to learn more things about the British culture. [R]
9. I want to "hang out" with people from my country.
10. I would like to have more friends from my own nationality.
11. I have no wish to go back to my own country. [R]
12. It is important to me to preserve my own cultural heritage.
13. I would like to live in an area where there are only people from my nationality.
14. The culture from my own country is something that I value.
15. If I could I would only use my own national language in my daily life.
16. I enjoy going to gatherings or parties held by people of my own nationality.
17. The culture of my own country is not interesting. [R]

Next, we would like to know more about you.

1. What is your age?
2. What is your gender? (male, female, other/ prefer not to say)
3. What is your ethnicity?
4. What is (are) your nationality (nationalities)?
5. What is your mother tongue(s)?
6. Is this your first year studying abroad in the UK?
7. When did you first reach University of Exeter?
   a. July 2019 – INTO pre-sessional English programme
   b. Sep 2019 – Fresher's Week
   c. Others: (please state): _____
8. Do state your IELTS results:
   Listening, Reading, Writing, Speaking, Overall Band
9. Are you religious? (If yes, do you practice your religion?)
10. What is your programme of study?
11. At which level of programme are you? (Undergraduate/ postgraduate)
12. How long, in months, have you been in the UK?
13. Is this your first visit to the UK? (If it is not your first visit, how many times have you previously visited the UK?)
14. What is your relationship status? (single/ married/ in a relationship/ others)
15. What kind of accommodation are you living in during term time? (university accommodation/ staying with family/ private rental/ others) (if university accommodation, please provide the name)
16. Think about your social network here at the University of Exeter.

What percentage of the people are in it (total up to 100%).
   a) British people
   b) People from my home country
   c) Other international students who are not from my home country
17. Are you active in sports/ clubs/ societies in University of Exeter? (If yes, what sports/ clubs/ societies are you active in?)
18. Do you join any other organizations in the UK (outside University of Exeter)?

So that we can match up your answers to this survey with the answers you give in the following parts of the study, we need you to generate your own anonymous personal code. You will be asked for this code again in the following parts of the study. Using the code means that we don't have to ask for your name, and won't compromise the anonymity of your responses.

To generate your code, please provide:

The date of your birthday (e.g., if you were born on the 4th of July, your answer would be "04").
The first two letters of your father's first name (e.g., if your father's name was Robert, this would be "RO").
The first two letters of your mother's first name (e.g., if your mother's name was Mary, this would be "MA").

Thank you, the first part of the study is over! Please click the red button >> below to send your answers.

When you submit your answers, you will be taken to a separate page, where you will be asked for an email address where we can contact you to arrange the second part of the study. Please be assured, this email address will be stored separately from the answers you just gave.

==
separate link (will be destroyed by end of Term 1)

Thanks for submitting your answers to part 1 of this study!

So that we can contact you for part 2, and also to participate the £20 Amazon voucher prize draw, in the space below please provide an email address where you are happy for us to contact you.

text: _____

Or, if you prefer the researchers to contact you through other means (e.g. Facebook, Wechat, mobile text), do fill in the blank below (e.g. Facebook name/ email, Wechat ID, mobile phone number).

Ignore this column if you prefer the researchers to contact you through the email address that you have provided above.

You will receive 1.5 pounds after completion of part 2 of this research project.

text: _____

You can now submit this by clicking the red button >> below. You will be hearing from us soon!

Online Surveys (4 different time-points)
(first page) Informed Consent

Thanks for coming along to the second part of this study, we really appreciate the time you are taking to help us out! This part of the study involves asking you to fill in some questionnaires, and will take about 20 minutes of your time. There will be more information about these tests on the pages that follow.

Before you start the second part of the study, we again need to know the code you generated for yourself at the end of the last study. That code had 3 elements, which can be generated by answering these questions:

The date of your birthday (e.g., if you were born on the 4th of July, your answer would be "04"). The first two letters of your father's first name (e.g., if your father's name was Robert, this would be "RO"). The first two letters of your mother's first name (e.g., if your mother's name was Mary, this would be "MA").

First, take a moment to think back over the last 7 days. Over the last week in your accommodation,

(a) When thinking about this space, I use this space to: (1-7 point scale)
1. meet other people
2. get in touch with other people
3. succeed at my tasks
4. use my competence

(b) I am in my accommodation mainly because: (1-7 point scale)
I had to vs I choose to

(c) When I think about this space, I see it mainly as: (1-7 point scale)
A private space (i.e., somewhere I need permission to go) vs
A public space (i.e., somewhere I can go whenever I choose to without asking permission)
An international occupied space vs a home (i.e., British) student occupied space

(d) When I am in this accommodation, I feel (1-7 point scale - strongly disagree to strongly agree)
welcome
comfortable
relaxed
certain
able to do things that are important to me
able to be myself

Next, over the last week in your department,

(a) How frequently did you visit this space in the last 7 days? [set for them 7 days max]
(b) For each occasion that you were in that space, approximately how long (minutes) did you spend there?

(c) When thinking about this space, I use this space to: (1-7 point scale)
1. meet other people
2. get in touch with other people
3. succeed at my tasks
4. use my competence

(d) I am in my department mainly because: (1-7 point scale)
I had to vs I choose to

(e) When I think about this space, I see it mainly as: (1-7 point scale)
A private space (i.e., somewhere I need permission to go) vs
A public space (i.e., somewhere I can go whenever I choose to without asking permission)
An international occupied space vs a home (i.e., British) student occupied space

(f) When I am in this department, I feel (1-7 point scale - strongly disagree to strongly agree)
welcome
comfortable
relaxed
certain
able to do things that are important to me
able to be myself

Following that, over the last week on campus, have you been to The Forum?

Yes – proceed with the following questions

No – skip to next page

(a) How frequently did you visit this space in the last 7 days? [set for them 7 days max]
(b) For each occasion that you were in that space, approximately how long (minutes) did you spend there?

(c) When thinking about this space, I use this space to: (1-7 point scale)
1. meet other people
2. get in touch with other people
3. succeed at my tasks
4. use my competence

(d) I go to The Forum mainly because: (1-7 point scale)
I had to vs I choose to

(e) When I think about this space, I see it mainly as: (1-7 point scale)
A private space *(i.e., somewhere I need permission to go)* vs
A public space *(i.e., somewhere I can go whenever I choose to without asking permission)*
An international occupied space vs a home (i.e., British) student occupied space

(f) When I am in The Forum, I feel: (strongly disagree to strongly agree, 1-7 point scale)
unwelcome vs welcome
uncomfortable vs comfortable
tense vs relaxed

confused vs certain
able to do things that are important to me
able to be myself

Next, over the last week on campus, have you been to INTO Building?

Yes – proceed with the following questions

No – skip to next page

(a) How frequently did you visit this space in the last 7 days? [set for them 7 days max]
(b) For each occasion that you were in that space, approximately how long (minutes) did you spend there?

(c) When thinking about this space, I use this space to: (1-7 point scale)
1. meet other people
2. get in touch with other people
3. succeed at my tasks
4. use my competence

(d) I go to INTO Building mainly because: (1-7 point scale)
I had to vs I choose to

(e) When I think about this space, I see it mainly as: (1-7 point scale)
A private space *(i.e., somewhere I need permission to go)* vs
A public space *(i.e., somewhere I can go whenever I choose to without asking permission)*
An international occupied space vs a home (i.e., British) student occupied space

(f) When I am in INTO Building, I feel: (strongly disagree to strongly agree, 1-7 point scale)
unwelcome vs welcome
uncomfortable vs comfortable
tense vs relaxed
confused vs certain
able to do things that are important to me
able to be myself
Following that, over the last week on campus, what are other venues (excluding your department, The Forum, INTO Building) *on campus* where you have spent more than 30 minutes of your time? (list as many as you can recall).

text box: _____

Next, thinking about your experience on campus in general, to what extent do you agree or disagree with the following statements.
General questions on the campus as a whole:
strongly disagree to strongly agree (1-7 point scale)
1. In general, I like spending time on campus.
2. In my spare time, I often choose to be somewhere around campus.
3. In my spare time, I prefer to be in places other than on campus. (R)

4. In general, I feel a sense of belonging on campus.
5. In general, I feel "at home" on campus.
6. In general, when I am on campus, I feel like I "fit in".
7. In general, I know my way around campus.
8. In general, sometimes I get lost on campus. (R)
9. It is easy for me to form a mental map of the campus as a whole.

Now, take a moment to think about the groups you belong to on campus and the people you spend time with, then answer the following questions.
Multiple identities:
strongly disagree to strongly agree (1-7 point scale)

1. I belong to lots of different groups at the university.
2. I join in the activities of lots of different groups on campus.
3. I am friendly with people in lots of different groups at this university.
4. I have strong ties with lots of different groups of people on campus.

Think about your social network here at the University of Exeter.
What percentage of the people are in it (total up to 100%).

1. British people
2. People from my home country
3. Other international students who are not from my home country

As an international student, how do you feel treated by others on campus? Please indicate the degree to which you agree or disagree with the following statements.
Perceived discrimination:
strongly disagree to strongly agree (1-7 point scale)

1. I feel like I am personally treated differently to others because of my status as international student.
2. I have been deprived of the opportunities that are available to others because of my status as international student in University of Exeter.
3. International students are victimised at University of Exeter.
4. International students are discriminated against at the University of Exeter.
5. As an international student, I feel respected at the University of Exeter. (R)
6. As an international student, I feel included at the University of Exeter. (R)
7. As an international student, I feel accepted at the University of Exeter. (R)

Think about how you feel right now, then answer the following questions:
Resilience scale (BRS):
Strongly disagree 1 2 3 4 5 *Strongly agree*

1. I tend to bounce back quickly after hard times.
2. I have a hard time making it through stressful events. (R)
3. It does not take me long to recover from a stressful event.
4. It is hard for me to snap back when something bad happens. (R)
5. I usually come through difficult times with little trouble.
6. I tend to take a long time to get over set-backs in my life (R).

Personal self-esteem:
Strongly disagree 1 2 3 4 5 *Strongly agree*

1. On the whole, I am satisfied with myself.
2. At times, I think I am no good at all. (R)
3. I feel that I have a number of good qualities.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of. (R)
6. I certainly feel useless at times. (R)
7. I feel that I'm a person of worth, at least on an equal plane with others.
8. I wish I could have more respect for myself. (R)
9. All in all, I am inclined to feel that I am a failure. (R)
10. I take a positive attitude toward myself.

Satisfaction with life (SWL):
Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*
1. In most ways my life is close to ideal.
2. The conditions of my life are excellent.
3. I am satisfied with life.
4. I currently have the important things I want in life.
5. I do not want to change anything about my life right now.

How do you feel about being a student at the University of Exeter?
Group-Level Identification with University of Exeter
Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*
1. I feel a bond with this university.
2. I feel solidarity with this university.
3. I feel committed to this university.
4. I am glad to be a student in this university.
5. I think that Exeter university students have a lot to be proud of.
6. It is pleasant to be an Exeter university student.
7. Being an Exeter university student gives me a good feeling.
8. Being an Exeter university student is something I often think about.
9. Being an Exeter university student is an important part of my identity.
10. Being an Exeter university student is an important part of how I see myself.

How do you feel about being an international student at the University of Exeter?

Group-Level Identification with International Students in University of Exeter
Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*
1. I feel a bond with international students.
2. I feel solidarity with international students.
3. I feel committed to international students.
4. I am glad to be an international student.
5. I think that international students have a lot to be proud of.
6. It is pleasant to be international students.
7. Being an international student gives me a good feeling.
8. I often think about the fact that I am an international student.
9. The fact that I am an international student is an important part of my identity.
10. Being an international student is an important part of how I see myself.

Please indicate how much you personally disagree or agree with that statement using the scale provided.

Two Acculturation Dimensions Scale:
Strongly disagree 1 2 3 4 5 6 7 *Strongly agree*
1. I feel at ease with British people.
2. I like British culture and I will do my best to be part of it.
3. I feel uncomfortable being with people from the United Kingdom. [R]
4. I would like to live in an area where there are British people.
5. I make an effort to improve my English.
6. I don't feel comfortable to speak English with friends. [R]
7. I want to speak with British people and know more about them.
8. I don't want to learn more things about the British culture. [R]
9. I want to "hang out" with people from my country.
10. I would like to have more friends from my own nationality.
11. I have no wish to go back to my own country. [R]
12. It is important to me to preserve my own cultural heritage.
13. I would like to live in an area where there are only people from my nationality.
14. The culture from my own country is something that I value.
15. If I could I would only use my own national language in my daily life.
16. I enjoy going to gatherings or parties held by people of my own nationality.
17. The culture of my own country is not interesting. [R]

(at the end of the survey)
If you are distressed by any of the issues raised in this survey, needed, you can access help and advice via:
(i) Wellbeing Services
https://www.exeter.ac.uk/wellbeing/contact/
(ii) Student Guild Advice Unit
https://www.exeterguild.org/advice/
(iii) International Student Support
https://www.exeter.ac.uk/internationalstudents/
(iv) Residence Life Team
http://www.exeter.ac.uk/accommodation/students/currentstudents/residencelifeteam/
(v) Chaplaincy
https://www.exeter.ac.uk/chaplaincy/

We thank you for your time spent taking this survey.
Your response has been recorded.

Table 21a. Correlations – Host, Feelings of Belonging on Campus, Well-being Outcomes (sample size, *n*)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Host Orientation_T1	5.2744 (164)	.68155	--	.746** (155)	.725** (154)	.707** (155)	.321** (164)	.283** (155)	.384** (153)	.261** (155)	.144 (164)	.136 (155)	.095 (154)	.140 (154)	.160* (164)	.185* (155)	.079 (154)	.175* (154)	.054 (164)	.173* (155)	.098 (154)	.028 (154)
2. Host Orientation_T2	5.2645 (164)	.79690		--	.760** (155)	.715** (155)	.330** (164)	.366** (154)	.366** (155)	.256** (155)	.066 (164)	.094 (155)	.108 (154)	.046 (155)	.203* (164)	.241** (155)	.138 (154)	.198* (155)	.148 (164)	.274** (155)	.232** (154)	.139
3. Host Orientation_T3	5.2416 (163)	.79932			--	.838** (154)	.360** (154)	.326** (155)	.357** (162)	.336** (155)	.164* (154)	.121 (155)	.149 (163)	.084 (153)	.202* (154)	.224** (155)	.176* (163)	.187* (153)	.250** (154)	.245** (155)	.210** (163)	.115 (153)
4. Host Orientation_T4	5.2246 (164)	.83471				--	.298** (155)	.301** (155)	.338** (153)	.361** (164)	.104 (155)	.073 (154)	.104 (163)	.013 (155)	.106 (154)	.118 (163)	.073 (154)	.132 (163)	.158* (155)	.197* (154)	.131 (163)	.079
5. Feelings of Belonging on Campus_T1	4.4390 (164)	1.00069					--	.723** (155)	.732** (153)	.666** (155)	.191* (164)	.147 (155)	.105 (154)	.100 (154)	.194* (164)	.094 (155)	.115 (154)	.123 (154)	.173* (164)	.227** (155)	.170* (154)	.110 (154)
6. Feelings of Belonging on Campus_T2	4.6047 (164)	.97395						--	.750** (154)	.731** (155)	.213** (155)	.176* (164)	.124 (155)	.106 (154)	.231** (155)	.168* (164)	.096 (155)	.142 (154)	.308** (155)	.356** (164)	.210** (155)	.219** (154)
7. Feelings of Belonging on Campus_T3	4.6636 (162)	.97475							--	.743** (154)	.210** (153)	.192* (154)	.149 (162)	.145 (153)	.153 (153)	.107 (154)	.096 (162)	.107 (153)	.230** (153)	.338** (154)	.295** (162)	.200* (153)
8. Feelings of Belonging on Campus_T4	4.6677 (165)	.98128								--	.194* (155)	.093 (155)	.046 (155)	.018 (163)	.150 (155)	.059 (155)	.064 (155)	.079 (163)	.209** (155)	.220** (155)	.209** (155)	.214** (163)
9. Resilience_T1	3.1240 (164)	.64632									--	.708** (155)	.635** (154)	.619** (154)	.437** (164)	.350** (155)	.334** (154)	.352** (154)	.280** (164)	.179* (155)	.226** (154)	.131 (154)
10. Resilience_T2	3.1667 (164)	.70759										--	.793** (155)	.731** (154)	.482** (155)	.522** (164)	.446** (155)	.410** (154)	.237** (155)	.234** (164)	.267** (155)	.126 (154)
11. Resilience_T3	3.1215 (163)	.73358											--	.790** (153)	.478** (154)	.567** (155)	.525** (163)	.449** (153)	.246** (154)	.318** (155)	.302** (163)	.161* (153)
12. Resilience_T4	3.1646 (163)	.74512												--	.413** (154)	.497** (154)	.443** (153)	.466** (163)	.206* (154)	.202* (154)	.257** (153)	.170* (163)
13. Personal Self-esteem_T1	3.3585 (164)	.66109													--	.820** (155)	.806** (154)	.758** (154)	.427** (164)	.457** (155)	.418** (154)	.319** (154)
14. Personal Self-esteem_T2	3.3817 (164)	.70591														--	.843** (155)	.830** (154)	.433** (155)	.526** (164)	.444** (155)	.349** (154)
15. Personal Self-esteem_T3	3.4470 (163)	.69683															--	.824** (153)	.514** (154)	.531** (155)	.549** (163)	.427** (153)
16. Personal Self-esteem_T4	3.3755 (163)	.67459																--	.422** (154)	.486** (154)	.431** (153)	.468** (163)

Variable	M	SD																17	18	19	20
17. Satisfaction with Life_T1	4.2756 (164)	1.12272																--	.745** (155)	.729** (154)	.629** (154)
18. Satisfaction with Life_T2	4.3768 (164)	1.11968																	--	.782** (155)	.716** (154)
19. Satisfaction with Life_T3	4.3930 (163)	1.28318																		--	.745** (153)
20. Satisfaction with Life_T4	4.4307 (163)	1.25759																			--

Note: * $p < .05$ (two-tailed), ** $p < .01$ (two-tailed); T1/2/3/4 = Time-point 1/2/3/4.

Table 21b. Correlations – Host, Identification as Exeter Student, Well-being Outcomes (sample size, *n*)

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Host Orientation_T1	5.2744 (164)	.68155	- -	.746** (155)	.725** (154)	.707** (155)	.269** (164)	.320** (155)	.313** (154)	.208** (155)	.144 (164)	.136 (155)	.095 (154)	.140 (154)	.160* (164)	.185* (155)	.079 (154)	.175* (154)	.054 (164)	.173* (155)	.098 (154)	.028 (154)
2. Host Orientation_T2	5.2645 (164)	.79690		--	.760** (155)	.715** (155)	.296** (155)	.409** (164)	.326** (155)	.255** (155)	.066 (155)	.094 (164)	.108 (155)	.046 (154)	.203* (155)	.241** (164)	.138 (155)	.198* (154)	.148 (155)	.274** (164)	.232** (155)	.139 (154)
3. Host Orientation_T3	5.2416 (163)	.79932			--	.838** (154)	.358** (154)	.428** (155)	.369** (163)	.305** (154)	.164* (154)	.121 (155)	.149 (163)	.084 (153)	.202* (154)	.224** (155)	.176* (163)	.187* (153)	.250** (154)	.245** (155)	.210** (163)	.115 (153)
4. Host Orientation_T4	5.2246 (164)	.83471				--	.352** (155)	.359** (155)	.323** (154)	.350** (164)	.104 (155)	.073 (155)	.104 (154)	.013 (163)	.106 (155)	.118 (155)	.073 (154)	.132 (163)	.158* (155)	.197* (155)	.131 (154)	.079 (163)
5. Identification as Exeter Student_T1	5.0488 (164)	.98202					--	.830** (155)	.797** (154)	.734** (155)	.166* (164)	.050 (155)	.014 (154)	.033 (154)	.263** (164)	.163* (155)	.233** (154)	.175* (154)	.283** (164)	.305** (155)	.293** (154)	.277** (154)
6. Identification as Exeter Student_T2	5.1250 (164)	1.00186						--	.815** (155)	.749** (155)	.120 (155)	.090 (164)	.083 (155)	.026 (154)	.307** (155)	.276** (164)	.257** (155)	.218** (154)	.323** (155)	.424** (164)	.305** (155)	.343** (154)
7. Identification as Exeter Student_T3	5.1742 (163)	1.07735							--	.818** (154)	.132 (154)	.069 (155)	.049 (163)	.075 (153)	.315** (154)	.257** (155)	.292** (163)	.250** (153)	.257** (154)	.312** (155)	.382** (163)	.355** (153)
8. Identification as Exeter Student_T4	5.1299 (164)	1.02557								--	.192* (155)	.057 (155)	.042 (154)	.086 (163)	.216** (155)	.162* (155)	.158 (154)	.215** (163)	.199* (155)	.251** (155)	.253** (154)	.377** (163)
9. Resilience_T1	3.1240 (164)	.64632									--	.708** (155)	.635** (154)	.619** (154)	.437** (164)	.350** (155)	.334** (154)	.352** (154)	.280** (164)	.179* (155)	.226** (154)	.131 (154)
10. Resilience_T2	3.1667 (164)	.70759										--	.793** (155)	.731** (154)	.482** (155)	.522** (164)	.446** (155)	.410** (154)	.237** (155)	.234** (164)	.267** (155)	.126 (154)

Variable	M	SD	11	12	13	14	15	16	17	18	19	20
11. Resilience_T3	3.1215 (163)	.73358	--	.790** (153)	.478** (154)	.567** (155)	.525** (163)	.449** (153)	.246** (154)	.318** (155)	.302** (163)	.161* (153)
12. Resilience_T4	3.1646 (163)	.74512		--	.413** (154)	.497** (153)	.443** (163)	.466** (154)	.206* (154)	.202* (153)	.257** (163)	.170* (163)
13. Personal Self-esteem_T1	3.3585 (164)	.66109			--	.820** (155)	.806** (154)	.758** (154)	.427** (164)	.457** (155)	.418** (154)	.319** (154)
14. Personal Self-esteem_T2	3.3817 (164)	.70591				--	.843** (155)	.830** (154)	.433** (155)	.526** (164)	.444** (155)	.349** (154)
15. Personal Self-esteem_T3	3.4470 (163)	.69683					--	.824** (153)	.514** (154)	.531** (155)	.549** (163)	.427** (153)
16. Personal Self-esteem_T4	3.3755 (163)	.67459						--	.422** (154)	.486** (154)	.431** (153)	.468** (163)
17. Satisfaction with Life_T1	4.2756 (164)	1.12272							--	.745** (155)	.729** (154)	.629** (154)
18. Satisfaction with Life_T2	4.3768 (164)	1.11968								--	.782** (155)	.716** (154)
19. Satisfaction with Life_T3	4.3930 (163)	1.28318									--	.745** (153)
20. Satisfaction with Life_T4	4.4307 (163)	1.25759										--

Note: * $p < .05$ (two-tailed), ** $p < .01$ (two-tailed); T1/2/3/4 = Time-point 1/2/3/4.

Table 21c. Correlations – Host, Identification with International Students on Campus, Well-being Outcomes (sample size, *n*)

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Host Orientation_T1	5.2744 (164)	.68155	--	.746** (155)	.725** (154)	.707** (155)	.188* (164)	.245** (155)	.135 (154)	.101 (155)	.144 (164)	.136 (155)	.095 (154)	.140 (154)	.160* (164)	.185* (155)	.079 (154)	.175* (154)	.054 (164)	.173* (155)	.098 (154)	.028 (154)
2. Host Orientation_T2	5.2645 (164)	.79690		--	.760** (155)	.715** (155)	.209** (164)	.273** (155)	.150 (155)	.185* (155)	.066 (164)	.094 (155)	.108 (154)	.046 (154)	.203* (155)	.241** (164)	.138 (155)	.198* (154)	.148 (155)	.274** (164)	.232** (155)	.139 (154)
3. Host Orientation_T3	5.2416 (163)	.79932			--	.838** (154)	.220** (154)	.295** (155)	.185* (163)	.170* (154)	.164* (154)	.121 (155)	.149 (163)	.084 (153)	.202* (154)	.224** (155)	.176* (163)	.187* (153)	.250** (154)	.245** (155)	.210** (163)	.115 (153)
4. Host Orientation_T4	5.2246 (164)	.83471				--	.177* (155)	.214** (155)	.119 (154)	.189* (164)	.104 (155)	.073 (155)	.104 (154)	.013 (163)	.106 (155)	.118 (155)	.073 (154)	.132 (163)	.158* (155)	.197* (155)	.131 (154)	.079 (163)
5. Identification with International	5.3043 (164)	.92041					--	.668** (155)	.660** (154)	.616** (155)	.175* (164)	.145 (155)	.162* (154)	.061 (154)	.389** (164)	.351** (155)	.397** (154)	.262** (154)	.311** (164)	.322** (155)	.316** (154)	.211** (154)

Variable	M	SD	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Students on Campus_T1																	
6. Identification with International Students on Campus_T2	5.2043 (164)	.94871	--	.753** (155)	.720** (155)	.148 (155)	.112 (164)	.088 (155)	.055 (154)	.338** (155)	.301** (164)	.273** (155)	.282** (154)	.209** (155)	.301** (164)	.194* (155)	.245** (154)
7. Identification with International Students on Campus_T3	5.2755 (163)	.91767		--	.789** (154)	.113 (154)	.105 (155)	.120 (163)	.117 (153)	.325** (154)	.332** (155)	.367** (163)	.313** (153)	.165* (154)	.275** (155)	.314** (163)	.311** (153)
8. Identification with International Students on Campus_T4	5.3451 (164)	.88542			--	.300** (155)	.178* (155)	.126 (154)	.065 (163)	.340** (155)	.327** (155)	.316** (154)	.329** (163)	.207** (155)	.264** (155)	.244** (154)	.316** (163)
9. Resilience_T1	3.1240 (164)	.64632				--	.708** (155)	.635** (154)	.619** (154)	.437** (164)	.350** (155)	.334** (154)	.352** (154)	.280** (164)	.179* (155)	.226** (154)	.131 (154)
10. Resilience_T2	3.1667 (164)	.70759					--	.793** (155)	.731** (154)	.482** (155)	.522** (164)	.446** (155)	.410** (154)	.237** (155)	.234** (164)	.267** (155)	.126 (154)
11. Resilience_T3	3.1215 (163)	.73358						--	.790** (153)	.478** (154)	.567** (155)	.525** (163)	.449** (153)	.246** (154)	.318** (155)	.302** (163)	.161* (153)
12. Resilience_T4	3.1646 (163)	.74512							--	.413** (154)	.497** (154)	.443** (153)	.466** (163)	.206* (154)	.202* (154)	.257** (154)	.170* (163)
13. Personal Self-esteem_T1	3.3585 (164)	.66109								--	.820** (155)	.806** (154)	.758** (154)	.427** (164)	.457** (155)	.418** (154)	.319** (154)
14. Personal Self-esteem_T2	3.3817 (164)	.70591									--	.843** (155)	.830** (154)	.433** (155)	.526** (164)	.444** (155)	.349** (154)
15. Personal Self-esteem_T3	3.4470 (163)	.69683										--	.824** (153)	.514** (154)	.531** (155)	.549** (163)	.427** (153)
16. Personal Self-esteem_T4	3.3755 (163)	.67459											--	.422** (154)	.486** (154)	.431** (153)	.468** (163)
17. Satisfaction with Life_T1	4.2756 (164)	1.12272												--	.745** (155)	.729** (154)	.629** (154)
18. Satisfaction with Life_T2	4.3768 (164)	1.11968													--	.782** (155)	.716** (154)

Variable	M	SD	...	19	20
19. Satisfaction with Life_T3	4.3930 (163)	1.28318		--	.745** (153)
20. Satisfaction with Life_T4	4.4307 (163)	1.25759			--

Note: * *p* < .05 (two-tailed), ** *p* < .01 (two-tailed); T1/2/3/4 = Time-point 1/2/3/4.

Table 21d. Correlations – Host, Belonging to Multiple Groups on Campus, Well-being Outcomes (sample size, *n*)

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Host Orientation_T1	5.2744	.68155	-	.746**	.725**	.707**	.089	.143	.122	.127	.144	.136	.095	.140	.160*	.185*	.079	.175*	.054	.173*	.098	.028
	(164)		-	(155)	(154)	(155)	(164)	(155)	(154)	(155)	(164)	(155)	(154)	(154)	(164)	(155)	(154)	(154)	(164)	(155)	(154)	(154)
2. Host Orientation_T2	5.2645	.79690		--	.760**	.715**	.038	.196*	.072	.093	.066	.094	.108	.046	.203*	.241**	.138	.198*	.148	.274**	.232**	.139
	(164)			--	(155)	(155)	(155)	(164)	(155)	(155)	(155)	(164)	(155)	(154)	(155)	(164)	(155)	(154)	(155)	(164)	(155)	(154)
3. Host Orientation_T3	5.2416	.79932			--	.838**	.074	.198*	.065	.130	.164*	.121	.149	.084	.202*	.224**	.176*	.187*	.250**	.245**	.210**	.115
	(163)				--	(154)	(154)	(155)	(163)	(155)	(154)	(155)	(163)	(153)	(154)	(155)	(163)	(153)	(154)	(155)	(163)	(153)
4. Host Orientation_T4	5.2246	.83471				--	.083	.204*	.053	.137	.104	.073	.104	.013	.106	.118	.073	.132	.158*	.197*	.131	.079
	(164)					--	(155)	(155)	(154)	(164)	(155)	(155)	(154)	(163)	(155)	(155)	(154)	(163)	(155)	(155)	(154)	(163)
5. Multiple Group Memberships__T1	3.8780	1.28270					--	.695**	.673**	.668**	.079	.064	.017	.059	.127	.097	.039	.160*	.101	.176*	.097	.163*
	(164)						--	(155)	(154)	(155)	(164)	(155)	(154)	(154)	(164)	(155)	(154)	(154)	(164)	(155)	(154)	(154)
6. Multiple Group Memberships__T2	4.0579	1.35568						--	.764**	.743**	.120	.130	.113	.079	.204*	.195*	.070	.112	.203*	.278**	.141	.106
	(164)							--	(155)	(155)	(155)	(164)	(155)	(154)	(155)	(164)	(155)	(154)	(155)	(164)	(155)	(154)
7 Multiple Group Memberships__T3	4.1457	1.33096							--	.804**	.124	.151	.064	.037	.193*	.208**	.107	.165*	.183*	.289**	.206**	.147
	(163)								--	(155)	(154)	(155)	(163)	(153)	(154)	(155)	(163)	(153)	(154)	(155)	(163)	(153)
8. Multiple Group Memberships__T4	4.1909	1.29430								--	.200*	.187*	.100	.109	.205*	.213**	.137	.170*	.230**	.206*	.186*	.223**
	(165)									--	(155)	(155)	(155)	(163)	(155)	(155)	(155)	(163)	(155)	(155)	(155)	(163)
9. Resilience_T1	3.1240	.64632									--	.708**	.635**	.619**	.437**	.350**	.334**	.352**	.280**	.179*	.226**	.131
	(164)										--	(155)	(154)	(154)	(164)	(155)	(154)	(154)	(164)	(155)	(154)	(154)
10. Resilience_T2	3.1667	.70759										--	.793**	.731**	.482**	.522**	.446**	.410**	.237**	.234**	.267**	.126
	(164)											--	(155)	(154)	(155)	(164)	(155)	(154)	(155)	(164)	(155)	(154)
11. Resilience_T3	3.1215	.73358											--	.790**	.478**	.567**	.525**	.449**	.246**	.318**	.302**	.161*
	(163)											--	(153)	(154)	(155)	(163)	(153)	(154)	(155)	(163)	(153)
12. Resilience_T4	3.1646	.74512												--	.413**	.497**	.443**	.466**	.206*	.202*	.257**	.170*
	(163)												--	(154)	(154)	(153)	(163)	(154)	(154)	(153)	(163)
13. Personal Self-esteem_T1	3.3585	.66109													--	.820**	.806**	.758**	.427**	.457**	.418**	.319**
	(164)													--	(155)	(154)	(154)	(164)	(155)	(154)	(154)
14. Personal Self-esteem_T2	3.3817	.70591														--	.843**	.830**	.433**	.526**	.444**	.349**
	(164)														--	(155)	(154)	(155)	(164)	(155)	(154)
15. Personal Self-esteem_T3	3.4470	.69683															--	.824**	.514**	.531**	.549**	.427**
	(163)															--	(153)	(154)	(155)	(163)	(153)

16. Personal Self-esteem_T4	3.3755 (163)	.67459				--	.422** (154)	.486** (154)	.431** (153)	.468** (163)
17. Satisfaction with Life_T1	4.2756 (164)	1.12272					--	.745** (155)	.729** (154)	.629** (154)
18. Satisfaction with Life_T2	4.3768 (164)	1.11968						--	.782** (155)	.716** (154)
19. Satisfaction with Life_T3	4.3930 (163)	1.28318							--	.745** (153)
20. Satisfaction with Life_T4	4.4307 (163)	1.25759								--

Note: * p < .05 (two-tailed), ** p < .01 (two-tailed); T1/2/3/4 = Time-point 1/2/3/4.

Study 5 – Full details of longitudinal analysis

Due to non-significant pathways (see Table 22a and 22b), we ultimately report details of two cross-lagged paths that emerged from these analyses: The first summarizes the pathways between international students' host orientation, feelings of belonging on campus and levels of resilience across four time-points (see Figure 1); the second summarises the pathways between international students' host orientation, feelings of belonging on campus and multiple group memberships across three time-points (see Figure 2). These two pathways are chosen because they reveal clearly the stability in variables across time, but also the marginally significant pathways between feelings of belonging on campus with resilience, and the significant pathways between feelings of belonging on campus with multiple group memberships.

We first examined an unconstrained baseline model and then added constraints on auto-regressive paths, cross-lagged paths, and both auto-regressive and cross-lagged paths simultaneously to find the most parsimonious model. Table 23a presents the fit statistics of each of the four models testing pathways among host orientation, feelings of belonging on campus and resilience across four time-points, whereas Table 23b presents the fit statistics of each of the four models testing pathways among host orientation, feelings of belonging on campus and multiple group memberships across three time-points. To choose the most parsimonious yet best fitting model, we used chi-square differences (Satorra & Bentler, 2001) as well as differences in comparative fit index (CFI) and root mean square error of approximation (RMSEA) to compare model fit. Prior work (Chen, 2007) suggests that two models can be assumed to be equal when a change in CFI is $\leq .01$ and a change in RMSEA is $\leq .015$. Based on these criteria, we chose the model in which the cross-lagged paths were constrained as our final model for the connections among host orientation, belonging on campus and resilience (Table 23a, Model 3); and we chose the unconstrained baseline model as our final model for the connections among host orientation, belonging on campus, and multiple group memberships (Table 23b, Model 1).

Table 22a. Summary of cross-lagged paths for four time-points (i.e., first set).

Model	IV→Med T2	IV→Med T3	IV→Med T4	Med→DV T2	Med→DV T3	Med→DV T4	AR #	Model Constrain
Host→CF→Resil	0.06 (.052)	0.06 (.054)	0.06 (.053)	-0.01 (.673)	-0.01 (.673)	-0.01 (.673)	3	CL
Host→IS→Resil	0.04 (.148)	0.04 (.152)	0.04 (.150)	-0.02 (.442)	-0.02 (.442)	-0.03 (.442)	3	CL
Host→IIS→Resil	-0.003 (.902)	-0.004 (.902)	-0.004 (.902)	-0.02 (.458)	-0.02 (.458)	-0.02 (.457)	3	CL
Host→MG→Resil	0.01 (.794)	0.01 (.794)	0.01 (.794)	-0.01 (.682)	-0.01 (.682)	-0.01 (.682)	3	CL
Host→CF→PSE	0.06 (.055)	0.06 (.057)	0.06 (.056)	-0.04 (.135)	-0.04 (.133)	-0.04 (.133)	3	CL
Host→IS→PSE	0.09 (.057)	0.04 (.460)	-0.07 (.122)	-0.06 (.228)	0.04 (.320)	0.02 (.601)	3	None
Host→IIS→PSE	-0.01 (.810)	-0.01 (.810)	-0.01 (.810)	0.02 (.518)	0.02 (.518)	0.02 (.519)	3	CL
Host→MG→PSE	-0.002 (.929)	-0.003 (.929)	-0.003 (.929)	-0.03 (.153)	-0.04 (.152)	-0.04 (.151)	3	CL
Host→CF→SWL	0.06 (.306)	0.08 (.150)	0.04 (.425)	0.05 (.359)	-.10*(.047)	-0.04 (.431)	3	None
Host→IS→SWL	.10* (.031)	0.04 (.398)	-0.01 (.770)	0.07 (.220)	-0.05 (.335)	.12*(.028)	3	None
Host→IIS→SWL	0.11 (.065)	-0.06 (.231)	-0.01 (.846)	0.09 (.102)	-0.06 (.265)	0.09 (.110)	3	None
Host→MG→SWL	0.08 (.171)	-0.08 (.120)	0.03 (.562)	.12*(.025)	-.10*(.041)	-0.05 (.289)	3	None

Note: $* < .05$. $** < .01$. $*** < .001$. Host = host orientation, CF = feelings of belonging on campus, IS = Identification as Exeter student, IIS = Identification with international students, MG = multiple group memberships, Resil = resilience, PSE = personal self-esteem, SWL = satisfaction with life.

Table 22b. Summary of cross-lagged paths for three time-points (i.e., second set).

Model	IV→Med T2	IV→Med T4	Med→DV T2	Med→DV T4	AR #	Model Constrain
Host→CF→IS	-0.03 (.507)	-0.03 (.506)	.08 (.076)	0.07 (.079)	2	CL
Host→CF→IIS	-0.01 (.859)	-0.01 (.859)	0.02 (.652)	0.02 (.652)	2	CL
Host→CF→MG	0.06 (.321)	-0.05 (.357)	.19**(.003)	.20**(.001)	2	None

Note: * < .05. ** < .01. *** < .001.

Table 23a. Fit indices and model comparisons for cross-lagged panel regression models. Host-CF-Resil, 4-time-points.

| | Model Fit | | | | | Difference from Model 1 | | | | |
	X^2	df	p	CFI	RMSEA	ΔX^2	Δdf	$\Delta X^2 p$	Δ CFI	Δ RMSEA
Model 1 - Unconstrained	33.64	18	.014	0.988	0.071					
Model 2 – AR Constrained	68.96	27	<.001	0.969	0.095	35.317	9	5.23789E-05	-0.019	0.024
Model 3 – CL Constrained	45.84	30	.032	0.988	0.055	12.203	12	0.429517323	0	-0.016
Model 4 – ARCL Constrained	83.64	39	<.001	0.967	0.081	49.999	21	0.000364917	-0.021	0.01

Note. CFI, comparative fit index; RMSEA, root mean square error of approximation.

Table 23b. Fit indices and model comparisons for cross-lagged panel regression models. Host-CF-MG, 3-time-points.

|	Model Fit					Difference from Model 1				
	X^2	df	p	CFI	RMSEA	ΔX^2	Δdf	$\Delta X^2 p$	ΔCFI	$\Delta RMSEA$
Model 1 - Unconstrained	2.96	6	.814	1.000	0.000					
Model 2 – AR Constrained	21.39	9	.011	0.985	0.089	18.428	3	0.000359	-0.015	0.089
Model 3 – CL Constrained	17.62	12	.128	0.993	0.052	14.664	6	0.023037	-0.007	0.052
Model 4 – ARCL Constrained	37.66	15	.001	0.972	0.093	34.697	9	6.74E-05	-0.028	0.093

Note. CFI, comparative fit index; RMSEA, root mean square error of approximation.
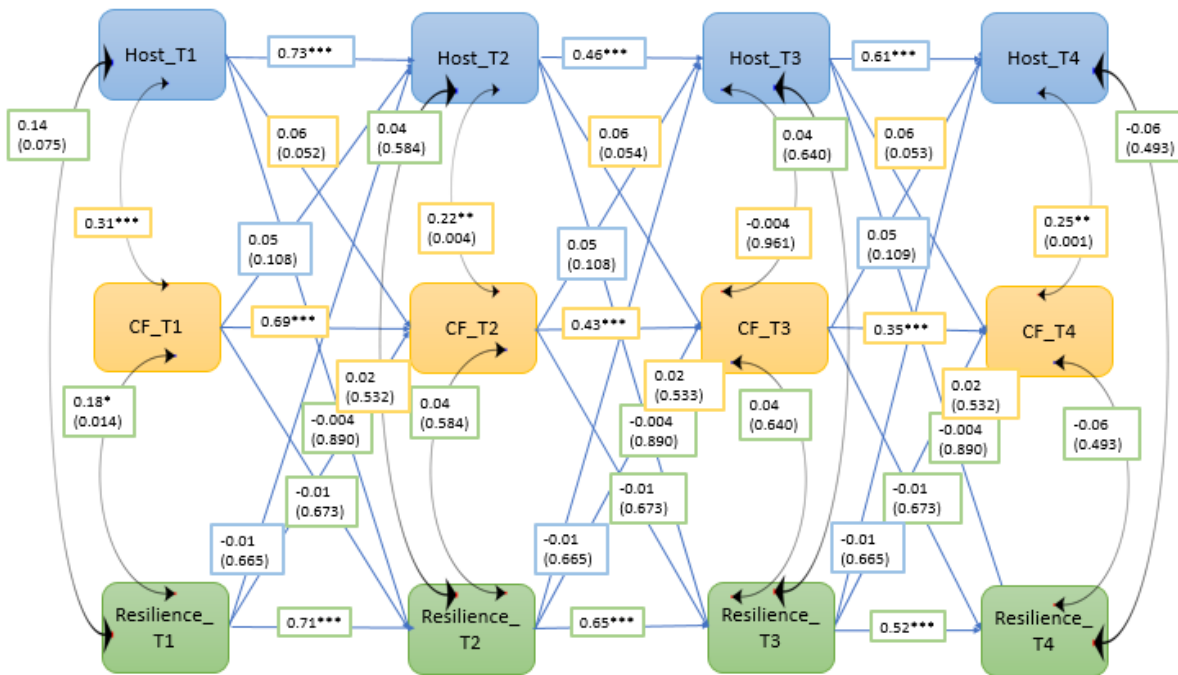
Note: *p <.05, **p <.01, ***p <.001.

Figure 8. Auto-regressive cross-lagged panel model showing longitudinal relations between host orientation among international students (Host), feelings of belonging on campus (CF) and well-being resilience levels (Resilience). T1/2/3/4, Time 1/2/3/4. *P* values shown in brackets.

As shown in Figure 8, all auto-regressive paths (*b*s = .43–.73) were significant (*p*s < .001), suggesting a high degree of across time stability in the variables. However, the cross-lagged paths from host orientation to feelings of belonging on campus were marginally significant (average *b* = 0.06, *SE* = 0.03, *p* = .052), whereas the paths from feelings of belonging on campus to resilience (average *b* = -0.01, *SE* = 0.03, *p* = .673) and from host orientation to resilience (average *b* = -0.004, *SE* = 0.03, *p* = .890) were non-significant. These suggest that over-time, international students' host orientation might lead to increased feelings of belonging on campus (and not vice versa), but that these factors do not predict over-time changes in resilience.
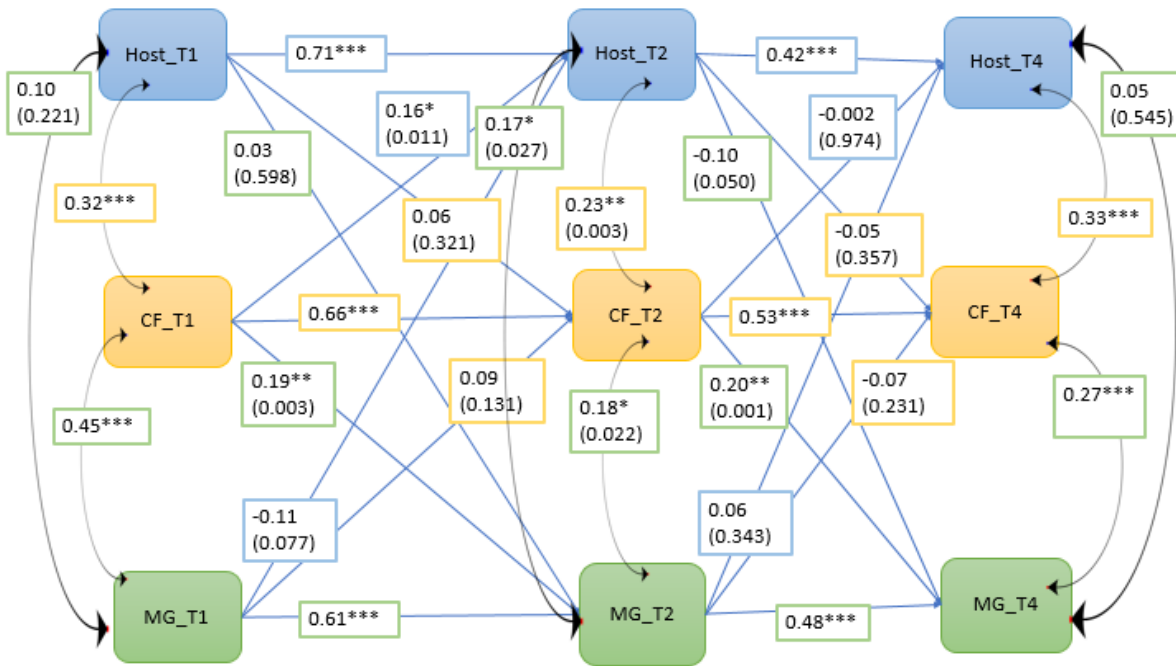
Note: *p <.05, **p <.01, ***p <.001.

Figure 9. Auto-regressive cross-lagged panel model showing longitudinal relations between host orientation among international students (Host), feelings of belonging on campus (CF) and belonging to multiple groups on campus (MG). T1/2/4, Time 1/2/4. *P* values shown in brackets.

As shown in Figure 9, all auto-regressive paths (*b*s = .42–.73) were significant (*p*s < .001), again suggesting a high degree of stability in the variables. In this model, the cross-lagged paths from host orientation to feelings of belonging on campus were not significant, T1-T2: *b* = 0.06, *SE* = 0.06, *p* = 0.321; T2-T4: *b* = -0.05, *SE* = 0.06, *p* = .357. However, the paths from feelings of belonging on campus to multiple group memberships were both significant, T1-T2: *b* = 0.19, *SE* = 0.06, *p* = .003; T2-T4: *b* = 0.20, *SE* = 0.06, *p* = .001. The cross-lagged paths between host orientation and multiple group memberships were inconsistent, being close to zero between Time 1 and Time 2 (*b* = 0.03, *SE* = 0.06, *p* = .598), but marginally significant and negative between Time 2 and Time 4 (*b* = -0.10, *SE* = 0.06, *p* = .050). These patterns suggest that international students' feelings of belonging on campus might predict their acquisition of group memberships over-time (and not vice versa), but this is not predicted by their level of host orientation.

Table 25. Mixed Model Analyses. Type III Tests of Fixed Effects upon Space Comfort (controlling for gender, ethnicity, and level of education)

	df 1	*df* 2	*F*	*p*
Gender	1	164.80	.32	.572
Ethnicity	1	167.05	.02	.890
Level of Education	1	166.34	.07	.791
Host	1	167.33	19.66	.000
Home	1	166.46	1.22	.272
Perceived "internationalness"	1	2497.75	48.33	.000
Perceived "internationalness" x Host	1	2507.25	.11	.736
Perceived "internationalness" x Home	1	2473.37	9.64	.002
Host x Home	1	171.47	.26	.610
Perceived "internationalness" x Host x Home	1	2464.63	9.31	.002

Table 27. Mixed model analyses. Type III tests of fixed effects upon other interested variables.

	Private vs Public		By Choice		Days Visited		Minutes Spent		Achievement		Affiliation	
	df 2	F	df 2	F	df 2	F	df 2	F	df 2	F	df 2	F
Perceived "internationalness"	2501.24	1.18	2393.82	1.07	2387.52	2.06	2257.43	1.12	2296.81	16.87***	2347.58	99.98***
Host	170.20	0.96	171.71	12.48**	171.69	1.07	171.91	1.71	172.77	16.59***	172.82	1.81
Home	168.73	0.91	169.91	0.13	169.81	4.11*	173.48	2.37	170.54	5.49*	170.84	4.59*
Perceived "internationalness" x Host	2493.04	10.59**	2385.59	4.40*	2379.52	0.71	2245.58	1.00	2271.63	1.95	2333.73	3.82
Perceived "internationalness" x Home	2480.79	1.54	2322.75	2.75	2315.76	0.51	2185.12	0.05	2235.31	4.29*	2262.86	0.001
Host x Home	176.23	1.49	179.53	0.62	180.25	0.41	181.51	0.11	180.77	1.15	181.55	2.06
Perceived "internationalness" x Host x Home	2360.84	4.03*	2145.54	11.69**	2134.13	0.69	1971.94	0.74	1978.14	0.18	2066.41	0.14

Note: *p <.05, **p <.01, ***p <.001

Table 28. Interactive pattern of host and home orientation on perceived "internationalness" with perceived space as private as dependent variable.

Combinations	Coefficients	S.E.	t	p
Low Host, Low Home	.035	.046	0.77	.445
Low Host, High Home	.058	.045	1.30	.195
High Host, Low Home	-.029	.040	-0.74	.457
High Host, High Home	-.1657	.046	-3.59	.000

Table 29. Interactive pattern of host and home orientation on perceived "internationalness" with visiting the space by choice as dependent variable.

Combinations	Coefficients	S.E.	t	p
Low Host, Low Home	-.143	.052	-2.76	.006
Low Host, High Home	.093	.050	1.86	.063
High Host, Low Home	.112	.044	2.55	.011
High Host, High Home	.046	.052	0.89	.373

Appendix C

Figure 10. Majority space and minority space on campus used for field experiments

Majority Space (i.e., The Forum)

Building design

Minority Space (i.e., INTO Building)

Building design

Additional Details of Study 2

Additional measures. Study 2 followed the same design and procedure already described in the main text. Within this paradigm, however, a number of additional measures were taken.

Independent variables. In this study, additional physical parameters of space were assessed while the participant was completing the tests in part 2. Specifically, the researcher recorded the ambient noise level during the testing via a decibel app on a smartphone. In addition, the researcher counted the number of people in the space visible to the participant, and coded these for ethnic group membership (i.e., White/ majority versus non-White/ minority). These indicators permit testing of the effects of crowding and associated noise on the experiences and performance of the participant.

Dependent variables. After all other measures, in this study we also assessed participant's feelings of identification with other international students using an adapted version of the 14-item In-Group Identification Scale (Leach, van Zomeren, Zebel, Vliek, Pennekamp, Doosje, Ouwerkerk, & Spears, 2008). This scale captures two dimensions of identification: self-definition and self-investment. Self-definition comprises measures of the degree to which individuals perceive similarity among, and between themselves and other group members (i.e., "group homogeneity", example items: "International students have a lot in common with each other"; and "self-stereotyping", example items: "I am similar to the average international students in person"). Self-investment concerns the degree to which the individual defines themselves strongly in terms of group membership ("centrality", example items: "The fact that I am an international student is an important part of my identity"), and experiences solidarity with other group members ("solidarity"; e.g., "I feel solidarity with international students" and positive emotions connected to group membership ("satisfaction", e.g., "I am glad to be an international student"). Responses to these items were given on a 7-

point scale ranging from 1 (strongly disagree) to 7 (strongly agree), and items were combined into two scales representing self-definition (combining self-stereotyping and in-group homogeneity) and self-investment (combining centrality, solidarity, and satisfaction). Cronbach alphas for all subscales ranged from .74 to .82.

Results

Preliminary checks. Following the usual basic checks (normality, outliers, potential demographic confounds), we compared the two spaces in terms of their social and physical properties (i.e., total amount of people, percentage of Whites versus non-Whites, and ambient noise while each participant was tested), as well as across all of the dependent measures (see Table 30). Consistent with our designation of the spaces as "Majority" versus "Minority", they differed in the average percentage of Whites versus non-Whites present at the time of testing: Whites dominated the Majority Space whereas non-Whites dominated the Minority Spaces.

Table 30. Means (and standard deviations) and tests of significant differences between spaces across all measures.

	Majority Space (*n* = 134)	Minority Space (*n* = 127)	*t*	*p*	95% *CI* Lower	Upper
Properties of Space						
Total People	14.47 (5.23)	9.20 (5.75)	7.75	< .001	3.932	6.608
Percentage of Whites	81.46 (9.18)	14.47 (17.26)	38.84	< .001	63.587	70.392
Noise Level (dB)	64.12 (3.01)	58.34 (4.26)	12.59	< .001	4.872	6.680
Main DVs						
Perceived Restorativeness	4.12 (0.84)	4.36 (0.77)	-2.36	.019	-0.433	-0.039
Test Results						
Numerical Reasoning	4.93 (1.47)	4.79 (1.53)	0.70	.485	-0.236	0.496
Verbal Reasoning	4.28 (1.54)	4.18 (1.49)	0.51	.613	-0.274	0.464

Total Score	9.20 (2.49)	8.98 (2.62)	0.71	.477	-0.397	-0.847
Experienced Difficulty						
Numerical Reasoning	3.11 (0.92)	3.21 (0.93)	-0.83	.405	-0.321	0.130
Verbal Reasoning)	2.65 (0.99)	2.83 (1.03)	-1.47	.143	-0.428	0.062
Happiness						
Before Test	1.88 (1.13)	1.95 (1.06)	-0.55	.581	-0.344	0.193
After Test	1.68 (1.07)	1.62 (1.28)	0.42	.674	-0.225	0.348
Identification						
Group-level Self-investment	4.93 (0.91)	4.98 (0.99)	-0.46	.648	-0.284	0.177
Group-level Self-definition	4.05 (1.15)	4.12 (1.16)	-0.49	.627	-0.285	0.179

Yet, the spaces differed in a number of ways beside the relative presence of majority versus minority individuals. Compared to the Minority Space, the Majority Space was also contained significantly more people and it was nosier. The two spaces also differed in their perceived restorativeness: The Minority Space was perceived to be more restorative than the Majority Space. While this pattern on perceived restorativeness could be consistent with our hypothesis (i.e., minority participants experiencing more restoration in minority spaces), it could reflect the physical differences between these spaces. Indeed, the restorativeness of space was significantly negatively correlated with the overall number of people, $r(260) = -0.14$, $p = .042$, the percentage of White students, $r(260) = -0.14$, $p = .024$, and the average noise level at the time of testing, $r(260) = -0.19$, $p = .002$.

Next, to determine whether these were independent sources of distraction, we simultaneously regressed the three physical parameters (number of people, percent Majority, and noise) on perceived restorativeness, $R^2 = 0.04$, $F(3, 257) = 3.44$, $p = .017$. In this analysis, only ambient noise was an independent negative predictor of perceived restorativeness, $b =$

- 0.03, $SE = 0.01$, $t = - 1.94$, $p = .054$, and the previously apparent relationships between perceived restorativeness and number of people, $b = - 0.002$, $SE = 0.01$, $t = - 0.17$, $p = .87$, or percent White, $b = - 0.10$, $SE = 0.17$, $t = - 0.61$, $p = .540$, became non-significant. This suggests that of the physical parameters assessed, noise intruded most on individual experiences within the spaces. For this reason, we ran all the analyses in Study 2 including noise as a covariate in the analysis to remove the effects of this possible confound. The analyses including the covariate did not differ substantively from the analysis without (as reported in the main paper). Table 31 below shows the analysis result summary of Study 2 with actual noise as covariate.

Table 31. Summary of within-study analyses, with actual noise as covariate.

	Study 2 ($n = 260$)		
	$F_{(1, 251)}$	p	η_p^2
Perceived Restorativeness			
Space	0.44	.507	0.002
Host Orientation	8.16	.005	0.031
Home Orientation	3.14	.078	0.012
Noise	5.32	.022	0.021
Host x Home	0.13	.722	0.001
Space x Home	0.42	.518	0.002
Space x Host	0.02	.879	0.000
Space x Host x Home	2.79	.096	0.011
Numerical Reasoning Test			
Space	1.91	.168	0.008
Host Orientation	6.95	.009	0.027
Home Orientation	1.37	.244	0.005
Noise	0.55	.459	0.002
Host x Home	0.94	.334	0.004
Space x Home	5.19	.024	0.020
Space x Host	1.97	.161	0.008
Space x Host x Home	1.00	.318	0.004
Verbal Reasoning Test			
Space	0.87	.351	0.003
Host Orientation	0.77	.381	0.003
Home Orientation	0.03	.867	0.000
Noise	0.25	.617	0.001
Host x Home	3.34	.069	0.013
Space x Home	3.14	.077	0.012
Space x Host	0.09	.767	0.000
Space x Host x Home	0.43	.513	0.002
Perceived Difficulty on Numerical Reasoning Test			

Space	1.22	.271	0.005
Host Orientation	1.21	.272	0.005
Home Orientation	0.02	.884	0.000
Noise	0.46	.501	0.002
Host x Home	0.10	.757	0.000
Space x Home	2.78	.097	0.011
Space x Host	0.34	.559	0.001
Space x Host x Home	0.09	.760	0.000
Perceived Difficulty on Verbal Reasoning Test			
Space	0.19	.663	0.001
Host Orientation	4.07	.045	0.016
Home Orientation	3.51	.062	0.014
Noise	0.79	.376	0.003
Host x Home	0.001	.980	0.000
Space x Home	2.64	.105	0.010
Space x Host	6.81	.010	0.026
Space x Host x Home	0.64	.423	0.003
Happiness (average) within space			
Space	0.20	.643	0.001
Host Orientation	7.68	.006	0.030
Home Orientation	0.02	.888	0.000
Noise	0.19	.664	0.001
Host x Home	0.14	.714	0.001
Space x Home	0.10	.753	0.000
Space x Host	0.16	.690	0.000
Space x Host x Home	1.06	.303	0.004
Group-level self-definition			
Space	0.34	.558	0.001
Host Orientation	0.65	.423	0.003
Home Orientation	4.91	.028	0.019
Noise	3.58	.060	0.014
Host x Home	0.13	.714	0.001
Space x Home	0.03	.870	0.000
Space x Host	0.08	.784	0.000
Space x Host x Home	0.83	.363	0.003
Group-level self-investment			
Space	0.05	.820	0.000
Host Orientation	4.39	.037	0.017
Home Orientation	12.22	.001	0.046
Noise	0.01	.933	0.000
Host x Home	4.58	.033	0.018
Space x Home	0.00	.985	0.000
Space x Host	4.94	.027	0.019
Space x Host x Home	0.06	.802	0.000

Numerical Reasoning Test. A multivariate analysis was performed to investigate space (i.e., majority space vs minority space), acculturation orientations (i.e., host orientation and home orientation), with actual noise level in space as covariate, upon numerical reasoning test and verbal reasoning test. The analysis revealed a significant main effect of

host orientation only upon the numerical reasoning test (see Table 31). Following on from that, inspection of the univariate effects revealed interaction effects between space and home orientation (see Table 31). This Space x Home orientation is graphed in Figure 11 and probed further via PROCESS analyses.

Figure 11. Interaction between home orientation acculturation orientation and the two different spaces (minority space and majority space), with noise as covariate on numerical reasoning test.

As can be seen in Figure 11, for participants lower in home orientation (1 *SD* below mean), numerical reasoning test performance was significantly better in the majority space than in the minority space (*M* MAJORITY SPACE = 5.09, *M* MINORITY SPACE = 4.29), *F* (1, 251) = 6.02, *p* = .015, partial η2 = 0.023, 90% *CIs* [0.0025; 0.0625]. In comparison, for participants higher in home orientation (1 *SD* above mean), there was no significant difference in numerical reasoning test performance in both the majority and minority space (*M* MAJORITY SPACE = 4.86, *M* MINORITY SPACE = 5.00), *F* (1, 251) = 0.21, *p* = .651, partial η2 = 0.001. Next, further probing on the simple effects of different spaces via PROCESS (Hayes, 2013) showed non-significant results for both majority space (*B* = -0.12, *SE* = 0.17, *t* (260) = -0.72, *p* = .470),

and minority space (B = 0.30, SE = 0.18, t (260) = 1.63, p = .105). This pattern is consistent with the idea that compatibility between the self and space might enhance academic performance, at least in terms of numerical reasoning test for participants with lower levels of home orientation. However, although the pattern of means reflects this interpretation, the simple effects contained within the interaction were not significant. Hence, this interpretation should be treated with caution.

Perceived Difficulty on Verbal Reasoning Test. Multivariate analysis was performed to investigate space (i.e., majority space vs minority space), acculturation orientations (i.e., host orientation and home orientation), with actual noise level in space as covariate, upon perceived difficulty on numerical reasoning test and verbal reasoning test. The analysis revealed a significant main effect of host orientation only upon perceived difficulty on verbal reasoning test (see Table 31). Following on from that, inspection of the univariate effects revealed interaction effects between space and host orientation (see Table 31). This Space x Host orientation is graphed in Figure 12 and probed further via PROCESS analyses.
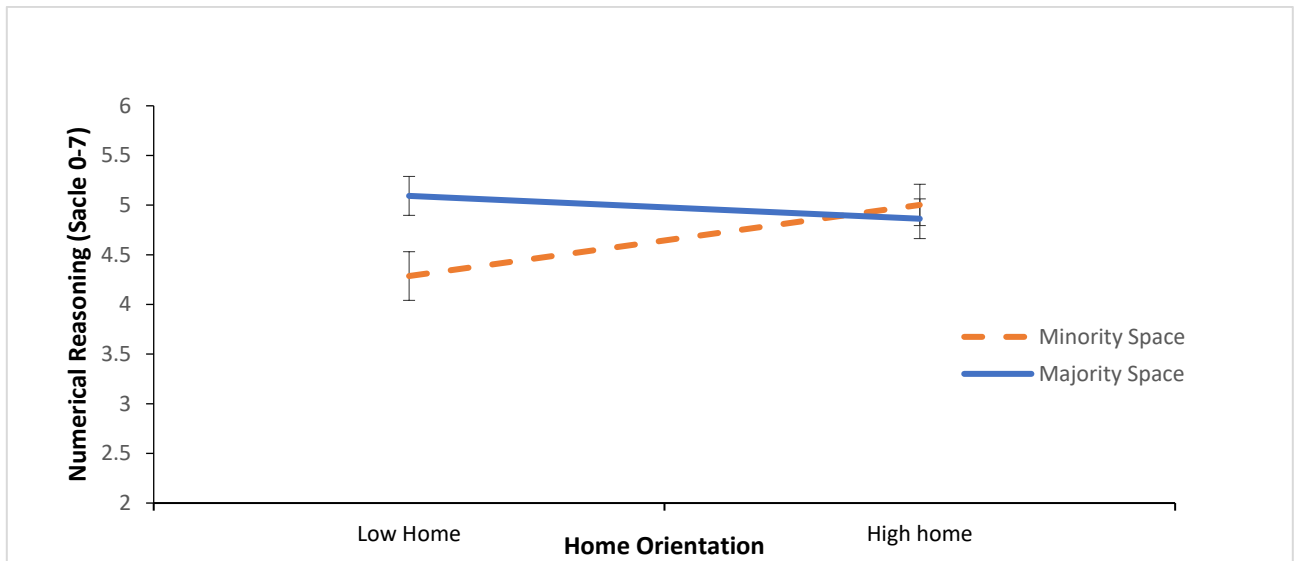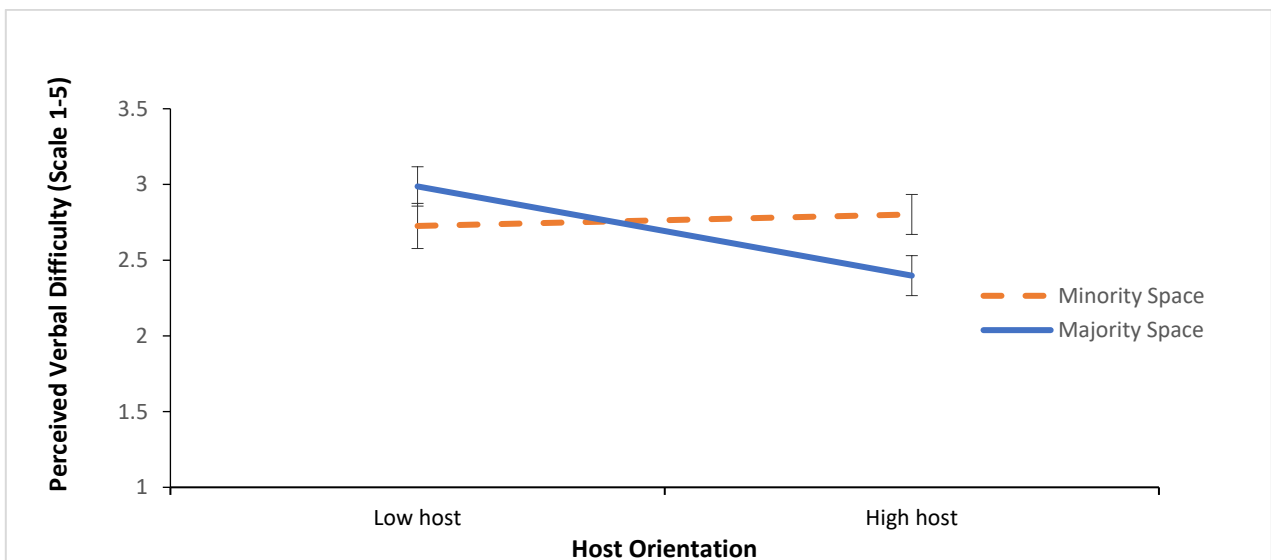

Figure 12. Interaction between host orientation acculturation orientation and the two different spaces (minority space and majority space), with noise as covariate on perceived difficulty on verbal reasoning test.

As can be seen in Figure 12, for participants lower in host orientation (1 *SD* below mean), verbal reasoning test was perceived as slightly (though non-significant) harder in the majority space than in the minority space (*M* MAJORITY SPACE = 2.99, *M* MINORITY SPACE = 2.73), *F* (1, 251) = 1.50, *p* = .221, partial η2 = 0.006. In comparison, for participants higher in host orientation (1 *SD* above mean), verbal reasoning test was perceived as significantly harder in the minority space than in the majority space (*M* MAJORITY SPACE = 2.40, *M* MINORITY SPACE = 2.80), *F* (1, 251) = 4.26, *p* = .040, partial η2 = 0.017, 90% CIs [0.0004; 0.0517]. Next, further probing on the simple effects of different spaces via PROCESS (Hayes, 2013) showed non-significant results for the minority space (*B* = 0.004, *SE* = 0.12, *t* (260) = 0.04, *p* = .970), but significant results for the majority space (*B* = -0.37, *SE* = 0.11, *t* (260) = -3.26, *p* = .001). This pattern is consistent with the idea that compatibility between the self and space might improve cognitive functioning and hence participants self-reported lesser perceived difficulty of test, at least in terms of verbal reasoning test for participants in the majority spaces who varied in their levels of host orientation.

Group-level Self-investment. A multivariate analysis was performed on the identity-related outcomes of participants' group-level self-definition and self-investment measures. The analysis revealed a significant main effect of home orientation on both group-level self-investment and group-level self-definition, but main effect of host orientation on participants' group-level self-investment measures only. Inspection of the univariate effects (see Table 31) revealed interaction effects of space and host orientation on participants' group-level self-investment. This Space x Host orientation is graphed in Figure 13 and probed further via PROCESS analyses.
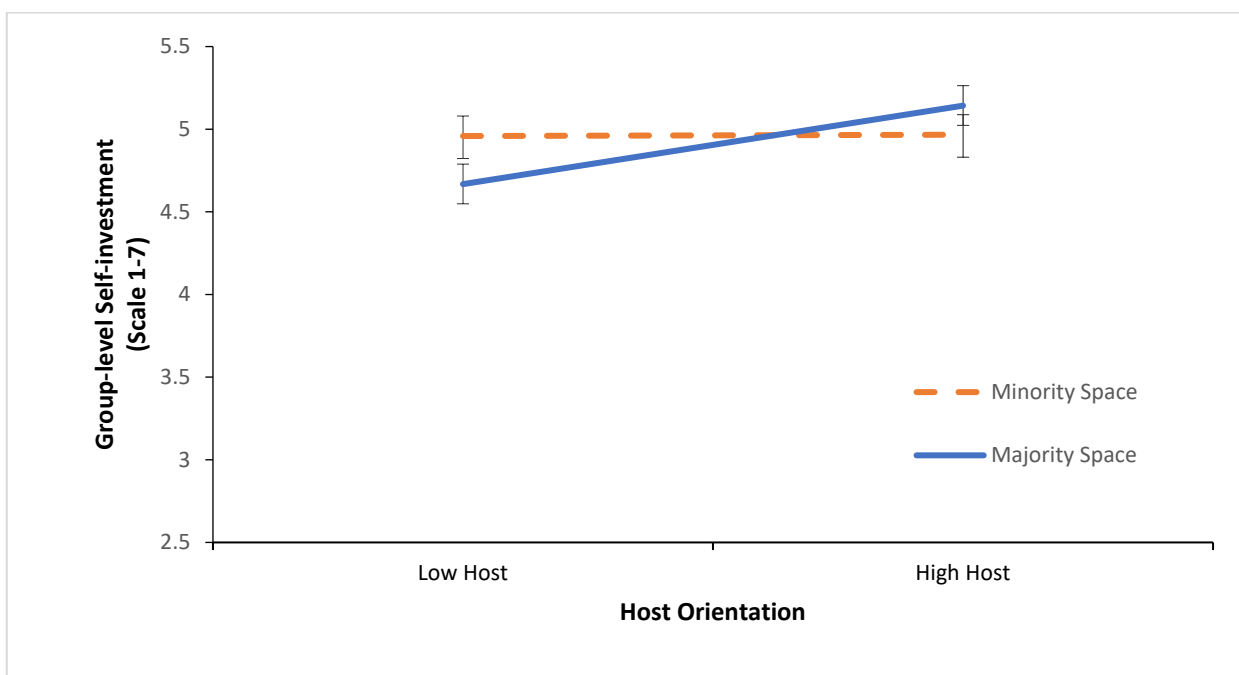
Figure 13. Interaction between host orientation acculturation orientation and the two different locations (minority space and majority space), with noise as covariate on group-level self-investment.

As can be seen in Figure 13, for participants lower in host orientation (1 *SD* below mean), their group-level self-investment was slightly (though non-significant) higher in the minority space than in the majority space (M MAJORITY SPACE $= 4.67$, M MINORITY SPACE $= 4.96$), F (1, 251) $= 2.28$, $p = .133$, partial η2 $= 0.009$, whereas for participants higher in host orientation (1 *SD* above mean), their group-level self-investment was slightly (though non-significant) higher in the majority space than in the minority spaces (M MAJORITY SPACE $= 5.14$, M MINORITY SPACE $= 4.97$), F (1, 251) $= 1.6$, $p = .207$, partial η2 $= 0.006$. Next, further probing on the simple effects of different spaces via PROCESS (Hayes, 2013) showed host orientation was associated with higher self-investment in international students' identity in the majority space, $B = 0.32$, $SE = 0.10$, t (260) $= 3.05$, $p = .003$, whereas in the minority space, the relationship between host orientation and group-level self-investment was absent, $B = 0.004$, $SE = 0.11$, t (260) $= 0.04$, $p = .970$.

Summary. These results of the analyses conducted on measures unique to Study 2 again show some evidence of space-identity matching. However, this pattern was observed with respect to the match between host orientation and majority space, and was revealed on indicators of group-level self-investment – that is the degree to which participants felt positively connected to other international students. However, it is unclear how this pattern of effects helps to better understand the meta-analytic results, which focus on the match between home orientations and minority space. Accordingly, these analyses also do not provide any insight into why restorative experiences created by the match between a stronger home orientation and being in a minority dominated space, did not translate into enhanced mood or better performance, as was our original expectation. The results of this study also show that physical parameters of space matter for restorative experienced. Measures of ambient noise in the test space were found to interfere with restorative experiences. Controlling for this did not, however, affect the observed interplay between acculturation orientations and space.

Additional Details of Study 3

Additional measures

Independent variables. Study 2 identified ambient noise as a significant source of distraction and something that disrupts restorative experiences of space, independent of any identity processes that may occur. To elaborate further on this, Study 3 included additional noise-related variables. Specifically, in the online survey, we measured individual differences in noise sensitivity via the 19-item Noise Sensitivity Scale (Weinstein, 1978). On this measure, participants indicated their agreement (1 = strongly agree to 6 = strongly disagree) with statements like "I get annoyed when my neighbours are noisy". These items

formed a reliable scale (Cronbach's alpha = .85) on which higher scores indicated a greater sensitivity to noise.

Dependent variables. In addition to patterns of identification with international students (as measured by scales of self-definition and self-investment described above), we also measured more specific evaluations of the space in terms of identity. Specifically, we asked participants to indicate the degree to which the study space they were in: "represents what is characteristic about my racial/ ethnic group", "is representative of the unique values of my racial/ ethnic group" and "exemplifies the beliefs that define my racial/ ethnic group"). These items were adapted from previous work (Glasford, unpublished) and were combined into a single index of group-based space proto-typicality. The Cronbach's alpha of this measure for this study is .88.

In addition to the space proto-typicality measure, we assessed the degree to which participants were familiar with the space they were in (3 items: "This study space is a new place to me" [reverse coded], "This study space is a place that I have come often in the past", "I regularly have classes in this building"; Cronbach's alpha = .71) and the subjective experience of noise-based distraction in the space (3 items: "I find this study space noisy", "The noise in this place is distracting to me", "I am not bothered by the noise level in this study space" [reverse scored]; Cronbach's alpha= .84).

Pre-registration. Unlike the Study 1 and Study 2, the design and hypotheses guiding this experiment were pre-registered. Details of the pre-registration can be found here: http://web.archive.org/web/20201016103446/https://aspredicted.org/2mi2d.pdf

Results

Preliminary checks. Following the usual basic checks (normality, outliers, potential demographic confounds), we compared the two spaces in terms of their social and physical properties as well as across all of the dependent measures (see Table 32). Again, this revealed a number of important differences between the spaces.

Table 32. Means (and standard deviations) and tests of significant differences between spaces across all measures

	Majority Space (n = 120)	Minority Space (n = 124)	t	p	95% CI Lower	Upper
Properties of Space						
Total People	9.85 (4.10)	7.15 (3.49)	5.56	< .001	1.746	3.664
Percentage of Whites	79.94 (13.56)	15.00 (17.67)	32.27	< .001	60.976	68.906
Noise Level (dB)	62.72 (3.98)	58.50 (4.02)	8.245	< .001	3.215	5.233
Perceived noise	4.22 (1.57)	3.73 (1.54)	2.47	.014	0.099	0.883
Familiarity	3.75 (1.42)	2.81 (1.79)	4.55	< .001	0.532	1.345
Proto-typicality	3.36 (1.13)	3.59 (1.12)	-1.62	.107	-0.516	0.050
Main DVs						
Perceived Restorativeness	4.36 (0.83)	4.45 (0.79)	-0.92	.358	-0.301	0.109
Test Results						
Numerical Reasoning	4.60 (1.49)	4.90 (1.55)	-1.52	.130	-0.678	0.087
Verbal Reasoning	4.06 (1.54)	4.33 (1.57)	-1.37	.172	-0.664	0.120
Total Score	8.66 (2.34)	9.23 (2.51)	-1.82	.069	-1.181	0.045
Experienced Difficulty						
Numerical Reasoning	3.35 (1.00)	3.34 (0.91)	0.93	.926	-0.230	0.253
Verbal Reasoning	2.99 (0.96)	2.90 (1.00)	0.70	.482	-0.159	0.335
Happiness						
Before Test	1.80 (1.04)	2.02 (1.03)	-1.66	.098	-0.481	0.041
After Test	1.56 (1.19)	1.66 (1.21)	-0.65	.514	-0.404	0.202

Identification

Group-level Self-investment	4.81 (0.88)	4.83 (0.96)	-0.21	.837	-0.256	0.208
Group-level Self-definition	4.12 (1.10)	4.19 (1.02)	-0.54	.591	-0.340	0.194

Again, these analyses confirm the designation of the two spaces as minority versus majority in terms of their domination by representatives of each of these groups. Again, the analyses also show that compared to the minority space, majority space contained significantly more people and was both objectively nosier and perceived as such. The minority space was perceived to be slightly more restorative than the majority space, but this difference was not significant in this study.

Further probing showed that the perceived restorativeness of space was significantly negatively correlated with overall number of people, r (244) = - 0.22, p = .001, actual noise level, r (244) = - 0.22, p = 0.001, and subjectively perceived noise in the space, r (244) = - 0.40, p < .001. When these three parameters (total people, actual noise, and perceived noise) were simultaneously regressed on perceived restorativeness, R^2 = 0.19, F (6, 237) = 9.13, p < .0001, only subjectively perceived noise was an independent negative predictor of perceived restorativeness: b = - 0.19, SE = 0.03, t = - 5.68, p < .001. Other parameters when regressed together with perceived noise upon perceived restorativeness were all non-significant, they were as follows: number of people, b = - 0.03, SE = 0.01, t = - 2.0, p = .052, percent White, b = 0.18, SE = 0.16, t = 1.14, p = .256, actual noise level, b = - 0.01, SE = 0.01, t = - 0.65, p = .519, familiarity with space, b = - 0.02, SE = 0.03, t = - 0.79, p = .428, and perceived space proto-typicality, b = 0.06, SE = 0.04, t = 1.36, p = .176. Predictably, the correlation between individual noise sensitivity and perceived noise in the study space was

significant, r (244) = 0.47, p < .0001, such that those who were more noise-sensitive also reported feeling more distracted by noise in the study space.

The above patterns again suggest that the spaces chosen are not equivalent in terms of their physical properties, and that the parameter noise – especially subjectively perceived noise rather than objective levels of this – intruded on individual experiences within the spaces. To address this important physical difference between spaces, subjectively perceived noise was included as a covariate in all analyses for Study 3[8]. Again, the analyses including this covariate did not differ substantively from the analysis without (as reported in Table 31 above). Table 33 below shows the analysis result summary of Study 3 with subjectively perceived noise as covariate.

Table 33. Summary of within-study analyses, with subjectively perceived noise as covariate.

	Study 3 ($N = 244$)		
	$F_{(1, 235)}$	p	η_p^2
Perceived Restorativeness			
Space	0.003	.958	0.000
Host Orientation	8.72	.003	0.036
Home Orientation	6.80	.010	0.028
Perceived Noise	46.11	.000	0.164
Host x Home	0.30	.588	0.001
Space x Home	7.27	.008	0.030
Space x Host	3.93	.048	0.016
Space x Host x Home	0.38	.539	0.002
Numerical Reasoning Test			
Space	2.08	.151	0.001
Host Orientation	0.75	.387	0.003
Home Orientation	0.46	.501	0.002
Perceived Noise	0.52	.470	0.002
Host x Home	0.10	.751	0.000
Space x Home	0.43	.511	0.002
Space x Host	3.51	.062	0.015
Space x Host x Home	0.48	.487	0.002

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[8] In the pre-registration, we included the plan to test higher-order interactions among noise, acculturation orientations, and space to test the hypothesis that identity-matching attenuates the negative effects of intrusive physical properties of space (following Alnabulsi & Drury, 2014; Novelli et al., 2013; Shankar et al., 2013; Shavegh et al., 2017). However, given the relatively small sample size, we decided that it was not appropriate to test three-way interactions with limited power.

Verbal Reasoning Test

Space	1.12	.291	0.005
Host Orientation	2.43	.121	0.010
Home Orientation	1.80	.181	0.008
Perceived Noise	0.02	.898	0.000
Host x Home	0.00	.983	0.000
Space x Home	2.27	.134	0.010
Space x Host	0.40	.526	0.002
Space x Host x Home	0.00	.987	0.000

Perceived Difficulty on Numerical Reasoning Test

Space	0.12	.732	0.001
Host Orientation	0.37	.544	0.002
Home Orientation	0.91	.341	0.004
Perceived Noise	4.25	.040	0.018
Host x Home	0.44	.506	0.002
Space x Home	0.13	.722	0.001
Space x Host	0.50	.480	0.002
Space x Host x Home	3.37	.068	0.014

Perceived Difficulty on Verbal Reasoning Test

Space	0.003	.959	0.000
Host Orientation	5.22	.023	0.022
Home Orientation	2.28	.132	0.010
Perceived Noise	0.20	.653	0.001
Host x Home	0.41	.524	0.002
Space x Home	2.96	.087	0.012
Space x Host	0.39	.532	0.002
Space x Host x Home	3.62	.058	0.015

Happiness (average) within Space

Space	0.002	.967	0.000
Host Orientation	12.25	.001	0.050
Home Orientation	0.87	.351	0.004
Perceived Noise	28.08	.000	0.107
Host x Home	0.47	.494	0.002
Space x Home	0.19	.660	0.001
Space x Host	1.02	.314	0.004
Space x Host x Home[9]	5.61	.019	0.023

Group-level Self-investment

Space	0.09	.772	0.000
Host Orientation	1.52	.219	0.006
Home Orientation	11.18	.001	0.045
Perceived Noise	1.17	.281	0.005
Host x Home	0.00	.990	0.000
Space x Home	2.22	.137	0.009
Space x Host	0.07	.790	0.001
Space x Host x Home	0.22	.640	0.001

Group-level Self-definition

Space	0.29	.593	0.001
Host Orientation	0.97	.326	0.004
Home Orientation	25.07	.000	0.096
Perceived Noise	3.32	.070	0.014
Host x Home	1.71	.193	0.007
Space x Home	1.82	.179	0.008
Space x Host	0.24	.624	0.001

[9] Further probing on this three-way interaction showed no significant results.

Space x Host x Home	0.05	.821	0.000
Space Proto-typicality			
Space	1.80	.181	0.008
Host Orientation	7.86	.005	0.032
Home Orientation	0.01	.943	0.000
Perceived Noise	0.06	.809	0.000
Host x Home	0.10	.747	0.000
Space x Home	2.53	.113	0.011
Space x Host	0.31	.576	0.001
Space x Host x Home	0.01	.943	0.000

Perceived Restorativeness of Space. In an ANCOVA simultaneously testing the effects of space, acculturation orientations (i.e., host orientation and home orientation), with subjectively perceived noise level in space as covariate (see Table 33), the analysis revealed a significant main effect of host orientation, home orientation, and perceived noise in space. We also found interaction effects between space and home orientation, and space and host orientation. These interactions are graphed in Figure 14 and 15 and probed further via PROCESS analyses.

Figure 14. Interaction between home orientation acculturation orientation and the two different locations (minority space and majority space), with perceived noise in space as covariate on perceived restorativeness of space.

As can be seen in Figure 14, for participants lower in home orientation (1 *SD* below mean), perceived restorativeness of space was slightly (though marginally significant) higher in the majority space than in the minority space (*M* MAJORITY SPACE = 4.39, *M* MINORITY SPACE = 4.08), $F(1, 235) = 3.50$, $p = .063$, partial η2 = 0.015, 90% *CIs* [0.0000; 0.0497] , whereas for participants higher in home orientation (1 *SD* above mean), perceived restorativeness of space was slightly (though marginally significant) higher in the minority space than in the majority space (*M* MAJORITY SPACE = 4.44, *M* MINORITY SPACE = 4.68), $F(1, 235) = 3.71$, $p = .055$, partial η2 = 0.019, 90% *CIs* [0.0006; 0.0562]. Next, further probing on the simple effects of different spaces via PROCESS (Hayes, 2013) showed non-significant results for the majority space (*B* = 0.02, *SE* = 0.09, $t(244) = 0.28$, $p = .780$), but significant results for the minority space (*B* = 0.32, *SE* = 0.08, $t(244) = 3.77$, $p = .0002$). This pattern is consistent with the idea that compatibility between the self and space increases perceived restorativeness of space, at least for participants in the minority spaces who varied in their levels of home orientation.
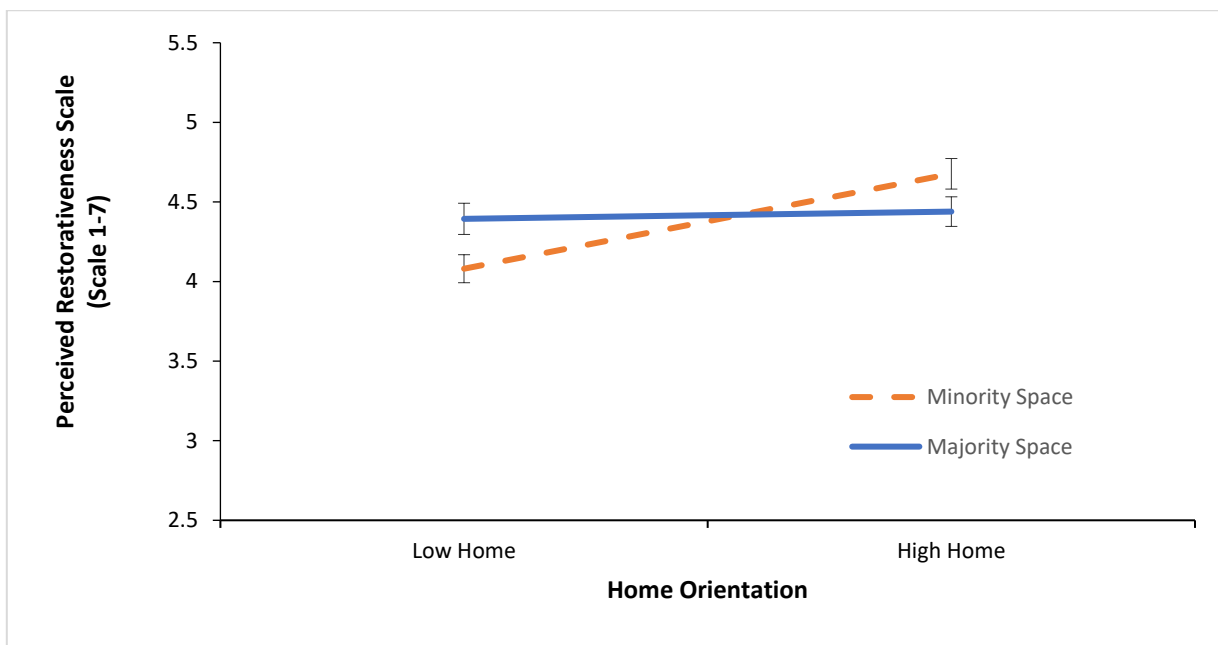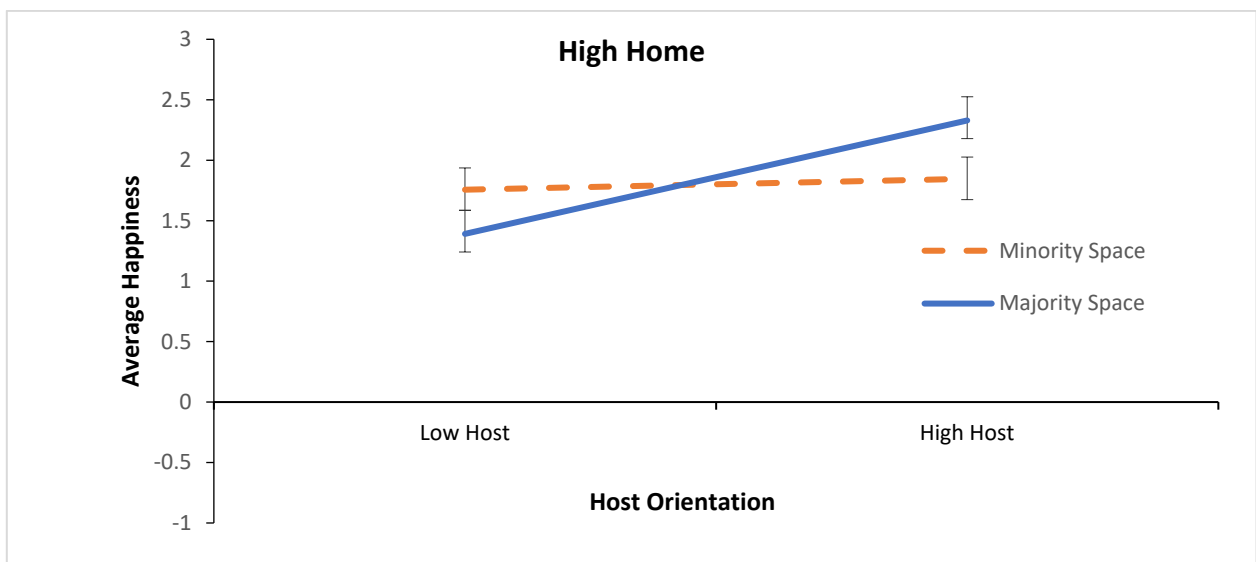

Figure 15. Interaction between host orientation acculturation orientation and the two different locations (minority space and majority space), with perceived noise in space as covariate on perceived restorativeness of space.

As can be seen in Figure 15, for participants lower in host orientation (1 *SD* below mean), perceived restorativeness of space was slightly (though non-significant) higher in the majority space than in the minority space (*M* MAJORITY SPACE = 4.31, *M* MINORITY SPACE = 4.09), *F* (1, 235) = 1.88, *p* = .172, partial η2 = 0.008, whereas for participants higher in host orientation (1 *SD* above mean), perceived restorativeness of space was slightly (though non-significant) higher in the minority space than in the majority space (*M* MAJORITY SPACE = 4.49, *M* MINORITY SPACE = 4.72), *F* (1, 235) = 2.04, *p* = .155, partial η2 = 0.009. Next, further probing on the simple effects of different spaces via PROCESS (Hayes, 2013) showed non-significant results for the majority space (*B* = 0.09, *SE* = 0.10, *t* (244) = 0.93, *p* = .353), but significant results for the minority space (*B* = 0.32, *SE* = 0.09, *t* (244) = 3.50, *p* = .001). This shows that there is variability of perceived restorativeness of space in the minority space among participants who varied in different levels of host orientation. However, this pattern is not robustly supported by the internal meta-analysis reported in the main paper.

Summary. These results of the analyses conducted on measures unique to Study 3, though did not show any significant interactions between acculturation orientation and the two spaces upon academic performance, still is our effort in trying to dig in deeper on understanding the match between home orientation and minority space vs host orientation and majority space. Evidently, these analyses do not provide any further insight into why restorative experiences created by the match between a stronger home (vs host) orientation and being in a minority (vs majority) dominated space, as shown in the meta-analytic results. However, the individual analyses (see Table 33) revealed significant interactions of space-identity matching, in which the higher the home orientation of international students, the more they experienced minority space as restorative, whereas restorativeness in the majority

space was not affected by participants' home orientation (see Figure 14). This interaction is consistent with the findings in the internal meta-analysis regarding effects of home orientation on experiences of space.

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