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'I deserve to be here': minority ethnic students and their conditional belonging in UK higher education

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Abstract
In efforts to support students' belonging in higher education, universities continue to cultivate and promote diversity and inclusion in their academic communities. Despite this endeavour, students from underrepresented backgrounds can still often encounter barriers to belonging at university. Existing research has identified multiple domains of student belonging in higher education, although there has been limited qualitative analysis of how belonging is experienced by minority ethnic students, especially at elite institutions. This paper draws on 72 in-depth interviews with minority ethnic STEM university students in the UK. Drawing on the sociological concept of *conditional belonging*, which is mostly used in migration studies, our findings indicate that students' construction and negotiation of belonging can be 'conditional' and 'conditioned' based on their prior educational experiences, perceptions of being a minority within their institutional contexts and social and academic interaction with others. We argue that *conditional belonging* can shape how students participate, engage, and develop belonging in higher education. We conclude with practical implications for learning and teaching that can foster a diverse and inclusive academic community for all.

Keywords Minority ethnic students · Conditional belonging · Identity · Underrepresented groups · Higher education

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Introduction

The development of belonging has been considered an important aspect of students' social and academic engagement in higher education. Prior research has demonstrated the effects of belonging on students' academic commitment, persistence, and achievement (Ahn & Davis, 2020; Meeuwisse et al., 2010). Often, a low sense of belonging can have negative implications for students' academic success and identity formation, especially for underrepresented students at 'elite' universities (Thomas, 2012; Tonso, 2006). In the UK, whilst the widening participation agenda appears to have increased access for students from underrepresented and particularly minority ethnic[1] backgrounds in higher education, there is ongoing concern for their participation and belonging. Even though all students share the same formal status and entitlement as university students after they have enrolled onto a degree programme, minoritised students often have differential experiences of belonging and engagement. Some barriers to student belonging may be experienced by all students, but they are often disproportionately experienced by minoritised students, particularly those pursuing degrees in Science, Technology, Engineering and Mathematics (STEM) disciplines, where dominant academic cultures may create additional challenges to inclusion and identity formation (Ong et al., 2011). The well-documented 'leaky pipeline' in STEM highlights how women and students from minority ethnic backgrounds are more likely to disengage or leave these fields at various stages of their academic journey, often due to a lack of belonging and insufficient institutional support (Blackburn, 2017). This leaky pipeline is particularly significant for ethnically minoritised women across all academic disciplines in the UK, who are 13.7% of the student body but only 2.1% of the professoriate compared to white men who make up 32.2% of the student body and then 67.4% of the professoriate (Advance HE, 2019).

Students who embody the university's cultural values and practices are often the ones who 'naturally' fit within the higher education setting. These students usually come from backgrounds that mirror the university's dominant culture, which is primarily white middle-class (Reay et al., 2010). For some students, belonging might be taken-for-granted or automatic, perhaps also even an unconscious or 'naturalised' concept, whilst for others, especially those from minority ethnic backgrounds, belonging can be a state that needs to be constantly worked and negotiated in order to connect to others, or fit in with the culture and perceived expectations of an academic community (Holmegaard et al., 2014). Having to make the effort or feeling the need to conform to pre-existing or dominant cultures and discourses can be associated with *conditional belonging*. This concept mostly appears in migration studies (Yodovich, 2021), where formal requirements for integration often serve as a kind of 'condition' for one's acceptance and belonging within a new national community or citizenry.

In the context of higher education, whilst there are no explicit or mandated criteria for integration, students from minority ethnic backgrounds may be subject to similar conditions of belonging. These students may often find it challenging and energy-consuming to navigate and fit into an institution in which one is minoritised (i.e. 'there are not many

[1] The term 'minority ethnic' is used following UK-based research and policy terminology, which recognises their numeric underrepresentation as ethnic groups when compared to the majority ethnic group. We acknowledge that there are diverse and different experiences between minority ethnic groups and there is a danger that grouping all ethnicities under any broad terms can neglects the specific challenges of particular ethnicities. We are mindful of its limitations. Where relevant, references to specific ethnicity are made.

people like me'). As belonging is complex with relatively limited qualitative research in the UK STEM higher education context (Dost, 2024; Fink et al., 2023), this article explores the concept of conditional belonging for minority ethnic students within the specific context of STEM undergraduate programmes at elite UK universities, focusing on the ways in which these students negotiate and develop a sense of belonging. The research question guiding this study is: *How do minority ethnic students in STEM disciplines at elite UK universities negotiate and develop their sense of belonging, and what conditions impact this process?* We begin with a brief review of the different conceptualisations of belonging in higher education, followed by minority ethnic students' experiences of belonging at university. Details of the study are then described before we present the analysis of *conditional belonging* for ethnic minority students at elite universities. With insights into these students' educational trajectories, we discuss the implications for practice and policy to recognise the complex nature of the negotiation of belonging and to promote diversity and inclusion to enhance student identity development at university.

The notion of 'conditional belonging'

Whilst the concept of belonging in higher education often emphasises the importance of creating inclusive and supportive environments for all students, it is equally important to consider the ways in which belonging is shaped by underlying, often unspoken conditions and expectations such as academic standards, institutional values and dominant views within an academic community about who 'fits'. Yodovich (2021) discussed *conditional belonging* as a 'social, liminal state in which individuals are required to demonstrate conformity to the community they wish to join' (p. 872). Yodovich's research on science fiction fandoms argues that women conceal their gender on virtual platforms to overcome gendered biases and 'evade exclusion' from male-dominated communities. This conceptualisation of conditional belonging highlights that belonging is not binary but exists on a spectrum. In other words, it involves dynamics of inclusion and exclusion (i.e. who belongs and who does not), whereby some people are 'initially suspected to be inauthentic' and those who do not automatically belong due to their social identities (e.g. gender) 'have to prove they deserve to be part of the collective' (Yodovich, 2021, p. 882).

Similarly, de Waal (2020) highlights the *conditional belonging* for some non-citizen immigrants and (often racially minoritised) citizens with certain immigrant backgrounds due to integration requirements of several European Union Member States. Citizenship is conceptualised as something that 'must be earned conditionally and is contingent on certain competences, characteristics and efforts' (p. 231), as well as something that 'needs to be deserved' (p. 240). People with certain immigrant and racially minoritised backgrounds are made to meet certain conditions, such as by 'having a job', 'being liberal-minded' and 'demonstrating active citizenship' (de Waal, 2020, p. 239), or by meeting specific English language requirements (Khan, 2022). Hackl (2022) contends that regimes of conditional citizenship are enacted by states and national majorities as means of control, which often leads to dehumanisation and ranking of individuals based on the extent they can meet specific, pre-determined criteria of behaviour and identity. Whilst beyond higher education specific literature, Hackl emphasises the necessity of assessing inclusion from a critical perspective. This involves acknowledging that racism and social marginalisation manifest not only as exclusion but also as a form of inclusion characterised by 'pre-defined limited entitlements' (p. 990) and pressure to conform.

Conceptualising belonging in higher education

Belonging can be conceptualised as feeling at ease, or at home, in relation to particular spaces, people, communities, and ideas, recognising sociological understandings of belonging as a situated and relational ongoing process (Gravett & Ajjawi, 2022; Wong, 2024). We are constantly developing and (re)negotiating our identity and sense of belonging based on the context in which our actions and interactions take place. In higher education, belonging can refer to the feeling of fitting into the culture of an institution and being included and accepted by other members, such as students and staff of that academic community (Masika & Jones, 2016).

Ahn and Davis (2020) identified four domains of belonging at university: 'academic and social engagement, surroundings, and personal spaces' (p. 626). Whilst acknowledging that academic engagement is important, they found social engagement was the most prominent aspect in students' sense of belonging. Their students most frequently referenced social contexts (e.g. friends, clubs and societies or a friendly environment) as helpful when settling into university and developing academic belonging. Meehan and Howells' (2019) study on 'being, belonging and becoming' amongst UK undergraduate first-year students also illustrated the positive impact of meaningful interactions with academics and peers in their transition to university.

Approaching belonging in a slightly different way, Morieson et al. (2013) presented a 'belonging model' that indicates three connected tiers of belonging for students across year groups on an Australian media and communications degree: programme (namely, disciplinary cohorts); school (a slightly higher-level interdisciplinary learning environment); and global (wider world of intercultural networks). Their focus groups demonstrated that often students initially develop a sense of belonging to their degree programme and incrementally expand to other interdisciplinary areas and beyond. Wilson et al.'s (2015) research on STEM undergraduates across US institutions also suggested the importance of students' immediate and localised learning context for belonging, in relation to the classroom, academic major/degree programme and the entire university. Likewise, Mallman et al. (2021) found that local contexts, such as campus cultures, can influence how students see themselves and others in cross-cultural interactions, which can also affect how students engage and develop belonging at university. Hence, belonging can be understood as relational and contextualised, and shaped by individuals and local settings, as well as wider social norms and institutional values (Wong, 2024). In other words, within these different settings are different environments, cultures, communities and practices, which have different contextualised expectations about what it means to be a university student, of a particular university, of a particular discipline, or of STEM in general.

There is a substantial literature on student belonging and inequality in the UK, with much of the sociological literature using Bourdieu to analyse the impact of class on student belonging at university (e.g. Burnell, 2015; Read et al., 2003; Reay et al., 2009, 2010; Thomas, 2015) with some scholars using Bourdieu also in relation to race (e.g. Wallace, 2017; Pennant, 2022). Feminist scholarship of exclusionary institutions has highlighted the felt experiences of marginalisation such as Puwar (2004) on the raced, gendered and classed dynamics of feeling like a 'space invader' in institutions such as universities, or Ahmed's (2017) work on 'diversity work'. Gamsu et al. (2019) highlight the racial geographies of UK higher education, whereby white students often encounter more ethnic diversity at university, whereas minority ethnic students often move from more ethnically diverse communities to universities that are comparatively less diverse. This creates a

double barrier: adjusting to a less diverse environment and feeling out of place alongside white peers unaccustomed to multi-ethnic settings.

Alongside positive social interactions and communities for belonging, belonging also relies on acknowledgement and validation from others. Tonso (2006) explores student identities at an elite US engineering university, highlighting the complexity of the identity formation which entails the amalgamation of thinking of oneself as an engineer, actively performing the role of an engineer and being perceived as an engineer by others. Being connected to and recognised by others, particularly through recognition from peers and academic staff, is crucial for student belonging, and supports students to (re) adjust to new contexts and settings (Holmegaard et al., 2014). However, recognition from others can be conditional, whereby insiders and dominant groups of an academic community, such as a STEM discipline, can judge the belongings of outsiders or other new community members, especially if they do not appear to share the dominant behaviours, languages, and identities of the majority group. Consequently, conditionalities of behaviour and identity tend to place people on a spectrum of belonging, in which some are presumed to belong, whilst others must manage the effects of marginalisation and prove they deserve to be a member of the community.

Minority ethnic students' belonging in STEM education at university

Minority ethnic students face a number of barriers in higher education as a result of racism and marginalisation in university spaces, which can contribute to feelings of alienation and lack of belonging (Cureton & Gravestock, 2019). Most studies in this context have been based in the US, whereby the general consensus suggests that minority ethnic students often have to work harder to conform to pre-existing cultures at university in order to persist in higher education and gain social acceptance from majority groups (Graham & McClain, 2019; Hunter et al., 2019). Consequently, students from minoritised groups are often required to 'code switch' or fit themselves into prevailing ideologies and discourses of majority groups (Rollock, 2014). This is akin to Bourdieu's analogy of the 'fish in water' and 'fish out of water' (Bourdieu & Wacquant, 1992). When an individual is in a situation that they feel is familiar, Bourdieu considers this to be like a 'fish in water' in that they do not feel the weight of the water and the situation is taken for granted. However, students from backgrounds less familiar with higher education are more likely to feel like a 'fish out of water' (Reay et al., 2010).

The work required to exist within an exclusionary institution when one is marginalised is named by Ahmed (2017) as 'diversity work'. Using the metaphor of 'an old garment', who describes how the 'shape' of an institution is acquired by those who wear it, highlighting the ease felt by student who more comfortably fit in at university, since it was designed by, and made to fit, people like them. This highlights the energy that is demanded from minorities, who must do intense emotional and internal work just to fit in, feel at home, or at least survive in an institutional space in which they are marginalised. Thus, students who discuss feelings of not fitting in or belonging at university are expressing a collective experience of marginalisation, even if their explanations might be inflected with individual and specific aspects, depending on who they are and their particular location or experience in the institution.

It is important to recognise that minority ethnic students may struggle to fit in at university because they do not necessarily share or align themselves with the same values

or social norms as the institutions that have historically excluded them, and continue to exclude them (Dortch & Patel, 2017). For instance, racism is an everyday reality for minority ethnic students in UK higher education, including within STEM disciplines (Wong et al., 2021, 2022). It takes various explicit and implicit forms and across university settings and contexts, creating barriers to participation and a sense of belonging by making students feel unwelcomed or undervalued. In the STEM higher education context, the pre-existing members and presumed insiders of academic (and non-academic) communities are mostly white privileged men, which means that minority ethnic students, especially women, may often have to overcome assumptions that they do not belong or only conditionally belong (Johnson, 2012). Rainey et al. (2018) found that amongst US undergraduate STEM students, white men were most likely to discuss a sense of belonging and minority ethnic women were least likely, based on four key factors: interpersonal relationships with peers and faculty, perceived competence in their discipline, personal interests related to their discipline, and science identity, referring to the extent that science is connected to their sense of self (see also Hazari et al., 2010). A lack of belonging, along with the mental and physical toll of not fitting in, is often more pronounced for minority ethnic students in STEM higher education, especially women (Ong et al., 2011). This has serious implications as student belonging is often associated with academic achievement, retention and persistence (Strayhorn, 2012), as well as positive identity development and wellbeing (Winstone et al., 2022).

A sense of belonging for minority ethnic students in higher education can therefore be understood as being conditioned by external influences and internalised by the self. This can include the pressure to conform to dominant institutional cultures or expectations, managing everyday experiences of racism and racial microaggressions, as well as other forms of marginalisation. This conditionality hinders the development of a community feeling amongst students (and staff) that is fundamental to fostering a sense of belonging, such as feeling 'good enough' (Murray et al., 2023) and having one's identity valued and accepted.

Guyotte et al., (2021, p. 556) argued that 'belongingness is not inherently positive' within a student community or campus climate that is inherently oppositional or exclusionary towards certain identities. Some individuals may struggle, or find it impossible, to feel a sense of belonging in an institution that is built upon and tolerant of racism, and often accepting of racist and anti-immigrant discourses. Whilst her study focused on working-class students and not specifically on ethnically minoritised students, Bettencourt (2021) observed a phenomenon of 'belonging as resistance', where students actively created their own spaces of connectedness to counter the dominant campus culture that perpetuates elitism. Conversely, students can sometimes express such resistance through rejecting dominant belonging discourses and seeking belonging elsewhere or inhabiting not belonging as a positive response to exclusionary institutions (Murray et al., 2024). In other words, the development of belongingness might also entail challenging the exclusionary institutional culture that hinders diversity and inclusion.

The study

This paper is based on a 2-year qualitative study on underrepresented undergraduate student experiences in STEM fields, focusing on their sense of belonging and exploring how being underrepresented may influence their identities and career aspirations at university.

Semi-structured interviews with 110 students were carried out between June and December 2020, conducted online due to COVID-19. Drawing on a subset of data from minority ethnic students (72 interviewees), we examine how their sense of belonging at university develops and the conditions and circumstances that shape this process, focusing on the institutional and social factors influencing their experiences.

The study was conducted within two mid-size English universities offering a range of STEM degree programmes, including one with medicine. Both institutions are pre-1992, with international reputations in STEM research and considered to be 'elite' universities. Students self-defined as part of one or more 'underrepresented' groups in UK higher education and STEM, including those who are women or non-binary, an ethnic minority, working class, LGBTQ +, disabled, first generation, international, and/or mature (21 or over upon matriculation). Students were recruited through email invitations, facilitated by STEM staff at both universities, which provided a sign-up link with information about the study, consent form, and asked for basic demographic data, including ethnicity.

All interviews began with a video introduction from the researchers to provide an overview of the project, interview process, with time for questions. For better recording quality and ease of conversation, video was switched off and only audio recorded. After finishing interview questions and stopping the recording, the researchers restarted video to formally conclude the interview and thank the participants for their involvement. The average time for each interview was 50 min. All interviews were transcribed verbatim, and data anonymised for publication.

Participants were asked to discuss their views and experiences of university, their STEM degree programme, and student experience so far, as well as to reflect on their decisions to study STEM at university, and their educational experience before university. Most of the interviews focused on sense of belonging and their perceived fit within their discipline and potential future professional career in STEM, and then if and how being an underrepresented STEM student shaped their experience. The researchers had no pre-existing relationships with the participants, and an e-voucher was provided as a token of appreciation. As researchers, we are mindful of the power dynamics inherent in our roles as staff interviewing students. For context, Chiu is a straight East Asian woman from a middle-class background; Wong is a straight British East Asian man from a working-class background; Murray is a queer disabled white Irish person from a middle-class background; Horsburgh is a white British woman with dyslexia, from a lower-middle-class background; Copsey-Blake is a straight, neurodivergent, white British woman from a working-class background. Some aspects of our identities may have been apparent to participants, and at times, we chose to disclose our belonging to underrepresented groups when it felt relevant. These shared, or unshared, identities could have influenced students' trust and their comfort in discussing more sensitive topics. We adopted an active listening approach to foster trust by validating students' experiences and aligning with their perspectives against discriminatory issues.

Students were recruited from all levels of undergraduate study and across STEM disciplines, including the biological sciences, computer science, engineering, mathematics, medicine and physics. A handful of applied sciences degrees, from building surveying to food science to zoology, were also recruited. Of the 72 minority ethnic students, 52 are women 20 are men. Although our participants identified with a range of ethnicities, we use broader terms to strengthen anonymity, such as Black British ($n = 9$), British East Asian ($n = 8$), British Middle Eastern ($n = 5$), British Mixed ($n = 8$), British South Asian ($n = 12$), International Asian ($n = 24$) and International Other ($n = 6$). Some students occupied more than one underrepresented group. For instance, 15 of the 52 minority ethnic women

and seven of the 20 minority ethnic men were working class, and some were also disabled and/or LGBTQ +. Whilst intersectional analyses and identities are important considerations, our primary focus is on the experiences of belonging amongst minority ethnic STEM students, an understudied population which is already diverse and complex. It is difficult to highlight all combinations of intersecting identities and forms of underrepresentation, particularly whilst maintaining anonymity.

Our data analysis was guided by a social constructionist perspective, which considers realities and experiences to be socially constructed and discursively produced (Burr, 2003). For systematic data management, all interview transcripts were imported into NVivo for organisation and analyses. A coding framework was developed after each author independently coded and reviewed three transcripts by relevant themes. These codes were then discussed and compared, and any differences on the application and definitions of codes were debated until a consensus was reached. The production of our coding framework involved an iterative process of data analysis, where we moved back and forth between the data and analyses through the comparison of data (Corbin & Strauss, 2014). For this paper, we focused on the codes and subcodes related to students' discussion of good and difficult sense of belonging at university, interpreted through the lens of belonging as conditional and conditioned. We identified three overarching themes: (1) the institutionalised nature of *conditional belonging* at elite universities; (2) the role of ethnicity in students' academic belonging (or the lack thereof), particularly for Black students; (3) the complexity of navigating diversity and commonality through student social interactions. All participant names used in this study are pseudonyms. During the sign-up process, participants were invited to provide preferred pseudonyms if they wish; however, in most cases, the researchers assigned pseudonyms. Particular attention was given to students who were hyper-underrepresented to further protect participant confidentiality. We acknowledge our limitations with intersectional analysis. Our focus on ethnicity took prominence over other social locations such as disability, religion, sexuality and social class. In the STEM context, however, gender plays a particularly important role and so we have highlighted intersections with gender where relevant. Further research is merited to explore these potential nuances.

Findings

Institutional elitism and competition: 'I'm not good enough to be here'

When asked about a time when they felt like they did not belong or fit in at university, most students expressed that their grades and academic performance made them feel disconnected from their academic community, particularly if they received lower grades than expected or desired. Many students experienced imposter syndrome, as we discuss elsewhere (Murray et al., 2023), in response to competitive discourses about being at high-achieving elite universities and STEM disciplines, as elaborated by Chao-Xing (British East Asian woman):

> I haven't always gotten the best grades. I think, I really lucked out to even getting into [this University], I always felt a little bit imposter syndrome. Like, I don't know whether I should be here, my grades aren't as good as all of my friends, I'm not sure if I fit in… I was like, "Oh, everyone's so much smarter than me… and I'm not sure whether I could be here."

Similar to Chao-Xing, many other students referred to their peers as being more competent than themselves and recognised the competitive culture of the institution which led them to question their presence and legitimacy at the university. Peter (British East Asian man) reflected 'maybe I'm not as suited to academics compared to other people in my course' and Lakshani (British South Asian woman) highlighted her university's reputation for academic achievement which contributed to her feeling that 'I wasn't good enough to be there… I was not getting as high a grade as I was used to getting'.

The institutional discourse around excellence and being word-leading influenced the ways in which students perceived themselves and others, encouraging a focus on academic achievement to 'fit in'. For these students, maintaining a high-achiever identity can be challenging in a cohort of fellow high achievers. For minority ethic students, this can also mean working even harder to fit into elite university cultures and feel deserving of their place (Hunter et al., 2019). In order to belong, there might be negative consequences to being ones' authentic self in competitive academic contexts. For instance, students at one of the universities expressed a predominant culture where peers tended not to admit mistakes or ask for help to maintain an appearance of competence. In such institutional or disciplinary contexts, student belonging can be conditioned by the overpowering standards or norms to shift their learning behaviours and relationships with peers. Rachana (British South Asian woman) illustrated this issue around performed confidence versus actual competence:

> So when I don't understand something, I'll make it clear that I don't understand. Whereas I feel like a lot of other people didn't want to say that they didn't understand because it would make them seem less clever. So, it was just that everyone was very confident in their abilities, but then when exams came around, a lot of people that acted as though they understood everything ended up having to resit?… and I think that's when I accepted that they weren't necessarily smarter than me. They just acted as if they were.

Rachana realised that other students' confidence did not always reflect their actual understanding. However, such false confidence can inhibit other students and impact their sense of belonging if they feel like they are the only one who does not understand and thus fear being less intelligent than their peers. Thus, students' *conditional belonging* could be magnified by others' performed belonging, where certain actions or behaviours allow them to fit into dominant academic norms and thus appear to belong to the community. Here, belonging is not necessarily positive, as such academic norms can be elitist and exclusionary (Guyotte et al., 2021). Other students expressed similar views to Rachana, but for some, their honesty and openness had negative consequences regarding how others perceived them, as Prisha (British South Asian woman) explained:

> If I get something wrong or if I don't know, I'm so vocal about it. And I never really saw that as a problem before, but eventually I could kind of tell that people just assumed that I don't know things because I'm so open about the times I don't.

Prisha highlighted a negative experience in a laboratory setting when other students thought '[she] wouldn't understand' something and refused to explain it to her, leading her to doubt herself, asking 'do I even belong here then, because this guy doesn't think I do'. Such instances illustrate how belonging is relational and conditional, often shaped by the perceptions of and interactions with others, particularly within dominant academic norms. Prisha internalised the impact of this exclusion and described how it led to self-doubt and feeling like an outsider in an elitist environment (Winstone et al., 2022). These challenges

are particularly pronounced for minority ethnic women in STEM higher education, whose identities are often marginalised or overlooked (Ong et al., 2011).

Some students explicitly disagreed with their university's institutional culture due to misaligned values or beliefs around careers, work-life balance, and politics. For example, Katherine (British Mixed woman) felt that she and her friends did not conform to the perceived typical student in her university who she described as 'super driven to do the best science possible and go into like… a high earning job or stay in academia' whereas she and her friends 'just want a different life to a lot of people at [the University]'. This sort of misalignment caused a constant feeling of 'outsiderness' in Katherine's university experience, which can often lead to a lack of belonging, as also elaborated by Deku (International Asian man): 'I generally don't really feel that much sense of belonging to [the University], in general. I feel a sense of belonging to individuals… I think it's just because my connection to these individuals that I felt a sense of belonging'. This highlights the importance of finding 'your people' whether in friendship groups or student societies, which could provide crucial support to students who did not feel a sense of belonging.

Minority students' academic interactions: 'I stick out like a sore thumb!'

Many minority ethnic students, particularly Black students—who were hyper-underrepresented in both universities in our study—reported negative academic interactions and a lack of belonging in their degree programmes. Michael (Black British man) described feeling a lack of belonging in his first year, because 'there weren't many other people from where [he comes] from' and that he felt 'almost as though you don't deserve to be here or you're here by fluke'. His comments highlight the pressures of marginalisation and the impact of institutional narratives about perceived merit and belonging, which can lead to internalised feelings of inferiority or impostor syndrome (Murray et al., 2023). Similarly, Beatrice (Black British woman) realised she was the only Black person on her course and thought 'maybe they just accepted me because they needed to accept someone from an ethnic minority. A Black person. I still think that to this day actually'.

Being hyper-underrepresented contributed to a sense of being tokenised and often a strong sense of alienation as the 'only one' on their course. Some students also raised concerns when lecture content or activities portrayed racist stereotypes such as 'exaggerating this ignorance of African people' (Beatrice) and displaying caricatures 'of African children who had massive lips and stuff', which can perpetuate anti-Black prejudice (Jillian, Black British woman). Beatrice also described having to contend with self-management in one of her lectures due to the fear of being reduced to a misogynoir stereotype. She reported her negative experience to the programme convenor but unfortunately never heard of any subsequent actions taken in response beyond the acknowledgement of her feelings. Other interviewees encountered racist jokes from other students, as experienced by Francesca (Black British woman) who said: 'why would you say that? I know I stick out like a sore thumb but don't remind me please, and you shouldn't say that please'. Another student, Khadija (Black British woman) also described her learning experience on medical placement:

> I'm very aware, as a Black woman, that I'm expected to be a nursing student and not medical student. And I've had the mistake happen a few times … I had a patient who was coming in and I called her over from the waiting area. And she turned to her boyfriend, and she said, well, I don't need to see the nurse, I don't know why the nurse is calling me in. And I said, well, I'm not the nurse, I'm a medical student.

Khadija described this happening frequently, which could affect her professional identity development and belonging at university, impacting her wellbeing (Winstone et al., 2022). Khadija said she felt like she really stood out and initially felt conditioned to accept anything from patients and others on her course. She was even told to be grateful because of where she comes from, suggesting discourses of anti-Blackness and racism (Wong et al., 2021, 2022), and the diversity work required from Black students to navigate white academic spaces (Ahmed, 2017). Over time, Khadija said she became 'more aware of the sense of not belonging' and 'actually angry about it'.

Given the underrepresentation of women in STEM contexts, interviewees reported gender-related issues. Amelia (British mixed woman) described the transition to university as daunting, particularly moving from an all-girls school to a STEM environment predominantly composed of men. She recalled times in the lecture theatre when she felt like: 'I'm the odd one out and I feel like people are looking at me' because of being the only, or one of very few women and the lack of woman lecturers in physics. Another physics student, Aletia (British mixed woman) stated:

> … in terms of belonging within the physics department, I really didn't ever feel that in the first week… going into that first introductory lecture... it was terrifying. It's just a room basically full of young men essentially. You could look around and there wasn't a single other woman in three rows. It was like quite intimidating.

Likewise, Maya (British South Asian woman) felt isolated and struggled to fit in during the first week of her building surveyor course due to most students being men. This led to a sense of loneliness and difficulty belonging on the course. Some students acknowledged efforts to address gender imbalances in STEM but then worried they were admitted as 'token' minority ethnic women, as Fela (International Other woman) described:

> 'I was really concerned that I didn't belong to be there, I wasn't good enough. Or that I just got in because I tick a box and it's not that they actually value me as a student'.

Minority students' social interactions: 'I don't have much in common with others'

Many of our students experienced a lack of belonging in social settings due to being marginalised in relation to their different educational and cultural backgrounds, making it challenging to find people 'like me, like around me' or feeling pressured to '[do] a lot to make sure that [they were] likeable' (Rahma, Black British woman). In particular, student drinking culture was a barrier to socially fitting in for many students, as exemplified by Felicity (International Asian woman):

> I feel like there's a lot of drinking culture in the UK and it's very casual… I feel like growing up, I've never really had such a casual experience with alcohol… I think it is a culture barrier that I've had to sort of adjust to because I didn't really feel comfortable doing that when I first came, so I felt like I couldn't really mesh well.

Felicity's attempts to adjust to this drinking culture demonstrate the conditionality of her belonging. In her case and others, belonging does not automatically happen without making a conscious effort to adapt, not always in fully chosen ways. Other students reported that the majority of other students shared cultural and educational backgrounds that led to their 'better sense of belonging with each other because they had that extra

thing in common' (Sanaya, British South Asian woman) in classed, raced, and culturally-specific ways. Meghan (British South Asian woman) explained how other students seemed to get along:

> They listened to the same music. They roughly knew the same schools. People were all very well-travelled… My secondary school was the worst one in the borough… But then you see everyone here with all these supports and all these resources and contacts.

For Meghan and many other minoritised students, their social interactions lead to self-awareness of their differences from the majority, making them feel inferior in terms of resources or past experiences. This contributed to their sense of not fitting in or conditionally belonging. This challenge is particularly pronounced in elite universities, where a higher proportion of students come from privileged backgrounds.

Having certain commonalities seems to be crucial, for example, Amandaz (International Asian woman) explained that generally people seem to 'have more friends within their own nationality or nearby nationalities'. Even though students acknowledged the importance of ethnic diversity at university, this does not always result in socially mixed friendship groups. Students also mentioned that others make assumptions about their culture and the language they can speak. Alexia (British East Asian woman) recalled an occasion where her roommate assumed she could speak Chinese, but she could not, which lead to a prolonged period of silence. Elif (International Other woman) also experienced incorrect assumptions based on her background. She felt:

> … it's just interesting seeing how people put certain labels on you and then they make certain assumptions about you based on your blood, where you're from… you have no choice in whatsoever.

Incorrect assumptions during social interactions can be insensitive and may contribute to unpleasant interactions especially for minoritised students who might already feel out of place. For minoritised students, *conditional belonging* can also be associated with different priorities. For instance, Banyu (International Asian man) expressed that others with whom he stayed in halls prioritised leisure and were detached from academic-related activities which he said: 'that's just not me. I didn't quite fit into that culture there, into the culture that they are creating'. Similarly, Masika (British Middle Eastern woman) stated that her flatmates, who were keen to go out frequently, made her feel 'it was always expected of [me]'. She further elaborated, 'I would tell myself I was having a good time, but I really wasn't. I felt like I just didn't really belong because everyone else seemed to be having a good time'. These examples appear to imply a sense of *conditional belonging* as students feel like they are 'outcasts' amongst individuals or groups.

Students were sometimes very explicit about feeling socially out of place due to their gender and ethnicity. Yemi (Black British woman) reflected on her experiences of differential and preferential treatment in a student society context: 'a lot of the guys in the society, the way they interact with me and then the way they'd interact with the other [White] girls were a bit different. And it made me feel a bit sad'. These encounters, however, also seem to have contributed to her development of resilience and determination to always be her authentic self, rather than to seek validations from others. Yemi elaborated that some people have certain pre-existing perceptions and unconscious biases due to their upbringing backgrounds and that 'affects the way that they see different people'. Unfortunately, Yemi did eventually leave this society and said: 'But I didn't blame them, I think it's just

something that they'd grown up with, so it just became a part of them'. This highlights the need to raise awareness about unconscious bias and promote intercultural understanding.

Discussions and conclusion

This paper explored minority ethnic STEM students' belonging in UK higher education, using the sociological concept of *conditional belonging* to unpack the complexities of belonging as a spectrum in which some (more privileged) students are already assumed to belong, and others belong conditionally. We argue that student belonging for racially minoritised students can involve negotiating, and often having to tolerate, racist behaviour from peers and staff. The feeling of belonging only conditionally for minoritised students is a response to an environment in which they are not the presumed subject, and thereby must do diversity work to exist and attempt to fit in at university.

Our findings suggest that many of our minoritised students seem to have frequent imposter feelings when they compare themselves to other students' academic performance (Murray et al., 2023). Whilst this is not exclusive to racially minoritised students, their feelings are exacerbated by the conditionality of their belonging. We argue that imposter feelings are part of *conditional belonging*—the feeling of not being worthy to be part of a community until they prove they deserve to be there, usually through academic achievement. However, elite institutions appear to worsen this feeling when a dominant culture of high achievers with strong academic credentials raise academic expectations whilst students are simultaneously making sense of being (hyper)underrepresented. Interestingly, it appears that our interviewees' sense of *conditional belonging* is a response to their peers' portrayal of a 'high-achiever identity', as illustrated by Rachana's case. For many students, being recognised and perceived as the typical 'high-achieving' student is desirable to challenge imposter fears or the sense of not fitting in. Recognition from peers and staff is crucial for student belonging and becoming and if they are part of a visible minority group, academic achievement can mitigate feelings of not belonging. However, this makes student belonging conditional on high academic achievement rather than simply being a student.

When other students consistently portray an image of 'knowing everything', it can create significant barriers to learning and engagement. For example, in order to be perceived competent and independent in a competitive learning environment, students might be afraid of making mistakes or asking questions. Pedagogically, it is important to have more open discussions about how imposter feelings are common and a normal part of learning for many students. It is also crucial to normalise asking for help and acknowledge that it is fine to make mistakes, which are all essential parts of learning process (Wong & Chiu, 2019). However, Prisha's account about others assuming she just lacks knowledge due to her frequent 'asking for help' behaviour raises an important question: Does seeking assistance come with unintended consequences? If so, educators should consider ways to encourage and normalise seeking support, including when and how to ask for help, to ensure effectiveness in the learning context (e.g. exploring independently before seeking assistance). We argue that the elitist culture experienced by students needs to be disrupted during the transition to university, for example through induction sessions and the first few weeks of teaching. This is important for all students, but especially minority ethnic and underrepresented students who often grapple with additional barriers and challenges due to being minoritised.

To address the elitist and ableist culture reported by students, we suggest institutions promote and recognise broader definitions of 'success' that go beyond traditional academic achievements (e.g. grades). For example, the focus could shift to skills and experiences that foster personal growth, creativity, reflection and community engagement (Baughan, 2021). To do so, educators could consider varied and authentic assessment practices that balance discipline-specific knowledge with real-life applications and professional development. Decentring traditional notions of academic excellence may mitigate some of the pressures felt by underrepresented students to overachieve by supporting them to self-reflect, and track and appreciate their progress.

Our data indicates that minority ethnic students, particularly Black students, encounter issues of alienation due to being hyper-underrepresented and this contributes to worries about being accepted to elite university STEM contexts, merely as 'tokens' for their race and/or gender. Multiple interviewees questioned if their acceptance was merely to fulfil a 'diversity quota'. This fear contributes to imposter feelings and adds pressure to (over) achieve in order to prove their worth, which again points to the conditionality that has been put on their belonging. Whilst it is imperative to improve a better representation of minoritised groups, our students have pointed out that simply increasing the representation and visibility of underrepresented groups is merely a first key step and indeed can fuel fears that they are *only* there for representational reasons. Therefore, we urge universities to treat representation as more than a token diversity metric, but as a core value that infiltrates institutional structures and processes, including student recruitment, student transition to university, the curriculum, and improved visibilities of underrepresented teaching staff and role models. For instance, students reported encounters of racist stereotypes and biases in lecture content, as well as inappropriate jokes, which contributed to feelings of discomfort and isolation from both peers and staff. These experiences of racism and racial microaggressions reflect the 'overwhelming whiteness' of UK higher education (Pennant, 2022) and highlight the conditionality of belonging in such spaces. Even when unintentional, such remarks function as microaggressions that foster exclusion. To address this, institutions must consider how racism manifests in university settings and is often minimised or dismissed by majority (white) groups. The university community—especially those in positions of power and privilege—must be prepared to actively prevent, recognise and confront racism, including its intersectional dimensions (Dabiri, 2021).

Furthermore, developing research-based substantial training can support staff and students to recognise and address their biases and inappropriate behaviour. Furthermore, integrating equality, diversity and inclusion (EDI) principles into the curriculum in STEM contexts can facilitate collective responsibility, highlighting the importance of fostering an inclusive and diverse educational environment as everyone's responsibility, not just specialist 'diversity workers' or minoritised staff and students.

Tackling racism is an ongoing process that demands meaningful and long-term, sustainable action, and the disruption of existing systems, cultures and belief-systems that normalise and perpetuate racial injustice. This requires both commitment and collaboration across difference, a willingness to be wrong and learn, and a safe and supportive reporting system for students to register complaints and concerns, with any complaints followed up and thoroughly addressed. Institutions must ensure that there are effective mechanisms in place to address incidents of racism, which are properly staffed, sufficiently independent, and prompt in taking constructive action to ensure students' concerns are taken seriously rather than merely becoming 'a tick box exercise'. This might include more tailored support services and training that specialises in anti-racist practice to better support those who are subjected to racism. To ensure students feel safe to report their concerns, such support

services should be similarly represented by a diverse team of anti-racist practitioners and advocates. At the top level, the university should encourage students to speak up about their experiences of racism, and recognise and celebrate anti-racist activism on campus, by responding in solidarity with social justice efforts, and in ways that support minoritised groups. For minority ethnic students, they can often 'stick out' and feel like 'outsiders' due to their low numbers in some university and on some degree programmes, and for some, akin to feeling like a 'fish out of water' (Bourdieu & Wacquant, 1992).

Our findings on social interactions highlight the importance of students finding commonalities with others as a key to foster belonging. However, many students tend to gravitate towards those from similar cultural backgrounds or languages, limiting their opportunities for diverse social mixing. Therefore, institutions need to proactively create authentic and inclusive social spaces that encourage meaningful interactions across diverse groups, so that all students have ample opportunities to connect beyond their immediate social circles. Gao and Liu (2021) argued that the absence of cross-cultural engagement and a limited racial/ethnic mix within the university setting can add to the sense of isolation and exclusion as experienced by students from ethnic minority backgrounds. We argue for more cohort-building through task-oriented social activities with the intended purpose of mixing students at the start of university to facilitate a positive and diverse learning culture. For example, during induction, universities could design group tasks for randomly assigned students, regularly provide opportunities to meet other students in inclusive social events spaces, for example attending to the diversity of preferences and requirements around catering, especially with regards alcohol and diet.

Many students reported that others struggle to interact with them, often basing assumptions on outward appearances. For example, individuals who appear Asian are frequently presumed to speak Chinese or share similar cultural values, leading to communication breakdowns when these expectations are unmet. Mallman et al. and's (2021, p. 1450) study on cross-cultural interactions highlights that 'the everyday, routine, and embodied nature of intercultural interactions' on campus encompass various elements, such as 'ignoring greetings, deflecting gestures of collaboration, or any number of potential mundane rejections' (p. 1456), which impact students'experiences of social belonging. Thus, it is important to emphasise that forming expectations based on visual cues can be a form of microaggression. Academic staff, in collaboration with other support services, can offer workshops for open discussions on assumptions and stereotypes, allowing students to share and challenge preconceptions. Using fictional case studies of intercultural communication and microaggressions can serve as a gentle way to scaffold students and staff into discussing these EDI issues.

Conditional belonging of minoritised students can be structurally produced through exclusionary academic and institutional cultures, especially in elite universities. Students might feel like academic and social conditions are placed on their sense of belonging, especially when they already feel out of place 'like a sore thumb' if part of an (hyper)underrepresented group. This can be reinforced through negative and judgemental interactions with staff and other students. Minority ethnic students might have already felt the need to fit into the dominant culture of the university or connect with others through unfamiliar or inappropriate methods such as alcohol-focused events. Any encounters, positive or negative, conscious or unconscious, can influence their meaning-making process. It is important to recognise that these students bring their prior experiences to university and if they have had negative experiences from school and continue to experience them at university, they can quickly disengage (Thomas, 2012). In other words, early positive experiences with peers and their community are crucial to disrupt their presumptions and potentially

continuous negative experiences from the past. In terms of support, personal or academic tutors can play an important role through regular conversations to understand if and how being minoritised affects their student experience. Having structured check-in points with staff (which need to be sufficiently workload-adjusted) can identify barriers and facilitate appropriate support.

Our research highlights that the notions of inclusion and acceptance do not necessarily equate to a sense of belonging, a sentiment well-articulated by one student who said: 'I feel like I'm accepted, I don't feel like I belong. I don't think it's my home.' Many minoritised students experienced a sense of conditions being placed on their belonging in elite universities and STEM disciplines. In universities, students may be formally accepted or included with their registered student status, but their sense of belonging can be non-existent, conditional or even marked by a resistance to embracing dominant modes of belonging and choosing not to belong (Gravett & Ajjawi, 2022; Murray et al., 2024). Addressing issues related to belonging requires ongoing efforts to go beyond the widening participation agenda to consider how to support underrepresented students from the moment they enter the academic community. As Khadija, argued: '…a lot of [underrepresented students especially Black students] end up dropping out, either because of academic or other reasons. So, what are you doing to kind of make sure that they stay? What are you doing so that when they get here, they don't feel like they're out of place?'. This calls for a more proactive approach that addresses both academic and non-academic challenges faced by underrepresented students, with the hope that they feel included, welcomed, connected and 'at home'.

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Declarations

Ethics approval and consent to participate This study was approved by Imperial College London's Education Ethics Board (EERP1920-079).

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