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Social interaction, sense of belonging, and psychological wellbeing: a study of Chinese international students in UK higher education

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Going to university is a time of great change and adjustment for students, particularly for Chinese international students (CIS) who are crossing borders and cultures to pursue their studies. The existing literature has shown that CIS social interaction is associated with their sense of belonging at university which, in turn, is associated with their psychological wellbeing. However, there remains a paucity of work examining these relationships within a single study, especially among CIS in the United Kingdom (UK), where social interaction, sense of belonging, and psychological wellbeing, are reported to be of concern. In the present study, 85 CIS at UK universities, were surveyed for their social interaction (peer and teacher-student relationships) and sense of belonging at university as well as their psychological wellbeing. It was found that students' social interactions and sense of belonging at university were significantly positively related with psychological wellbeing. Moreover, mediation analyses revealed that sense of belonging at university partially mediated the relationship between peer interactions and psychological wellbeing but fully mediated the relationship between teacher-student interactions and psychological wellbeing. Despite some limitations (e.g., sampling and methodological issues), this study makes a valuable contribution to understanding how different forms of social interactions (e.g., peer and teacher-student) affect CIS students' sense of belonging and, in turn, their psychological wellbeing. It also contributes practically, suggesting that initiatives such as expanded extracurricular opportunities and university peer mentoring programs may foster positive social interactions. These, in turn, may enhance students' sense of belonging at university and their psychological wellbeing.

KEYWORDS

Chinese international students, higher education, social interaction, belonging, psychological wellbeing, university

Introduction

Background and context

The number of students pursuing higher education internationally has increased substantially in recent years, with China historically representing the predominant source of international students at United Kingdom (UK) universities. During the 2021/22

academic year, Chinese students accounted for approximately 27% of the non-EU student cohort, reflecting a 41% increase (equivalent to 44,475 students) over a 5-year period (Higher Education Statistics Agency, 2023). Although India has now overtaken China as the primary country of origin for students in the UK, there remains continued expansion in international student enrolment, including students from China (Higher Education Statistics Agency, 2023). Chinese international students (hereafter referred to as CIS) often encounter a distinctive set of challenges; for example, in addition to navigating university life, CIS must simultaneously adapt to a new country, culture, unfamiliar social norms, and different educational expectations and approaches (Holliman et al., 2023). This can place significant strain on their psychological wellbeing (Zhang, 2020) underscoring the urgent need for research in this area. Furthermore, cross-cultural research (e.g., Lo, 2024) has identified differences in motivational profiles and learning strategies between students from China and the UK, which are likely to impact their interactional experiences in UK classrooms. In the present study, we examine two critical and potentially protective factors: social interaction and sense of belonging. While there exists empirical work examining these relationships in separate studies, few have examined these relationships within a single study, especially among a sample of CIS in the UK, where social interaction (Mori, 2000), sense of belonging (Chen and Zhou, 2019), and psychological wellbeing (Wang, 2018) are all reported to be of concern.

Theoretical framework

The current study is guided by the Integrative Framework of Belonging (Allen et al., 2021), which aligns well with our aims as it explicitly links the study's three primary constructs: social interaction, sense of belonging, and psychological wellbeing. In this framework, belonging develops through the interplay of four elements: competencies, opportunities, motivations, and perceptions. Within this structure, social interactions, such as peer and teacher-student relationships, are understood as key opportunities that help students feel accepted, included, and connected. For CIS studying in the UK, we suggest that these social experiences may facilitate the emergence of a sense of belonging, which subsequently promotes psychological wellbeing. These proposed relationships are elaborated on below, and insights are also drawn from theories such as Cross-Cultural Adaptation Theory (Kim, 2012).

Psychological wellbeing

Psychological wellbeing is a multifaceted construct typically considered in terms of happiness, positive affect, and life satisfaction (the so-called "hedonic approach": Diener, 1984). It refers to an individual's overall evaluation of the quality of their life and the pleasure it affords. Other definitions have focused on "eudaemonic wellbeing," which extends beyond pleasure and life satisfaction, encompassing meaning, self-realization, and the extent to which individuals perceive themselves as "fully functioning" (see

Ryan and Deci, 2001, for a conceptual discussion of "wellbeing"). Previous studies have identified a plethora of predictors of university students' psychological wellbeing, namely: personality (e.g., Zhang and Jiang, 2023), family support (e.g., Chaudhry et al., 2024), financial support (e.g., Pretorius and Blaauw, 2020) and academic stress (e.g., Córdova Olivera et al., 2023). Another known influential factor that predicts wellbeing is language ability (e.g., Edara, 2018). Indeed, Chen (1999) suggested that experiencing second language anxiety can influence wellbeing by negatively affecting the ability to write assignments, understand lectures, oral and written tests, and ask questions in class. Language barriers may also hinder international students' attempts to form friendships and interact with locals (see Cena et al., 2021). As a result, the language barriers can limit international students' social interactions and, in that context, may lead to a tendency for international students to interact with others from the same culture rather than with broader student population (e.g., Minutillo et al., 2020).

According to the Cross-Cultural Adaptation Theory (Kim, 2012), students experience strong emotional reactions when confronted with a change in culture (Wang, 2018). Cross-cultural adaptation is the process of change within an individual to enable functioning in an unfamiliar culture and involves the de-culturalization of original cultural habits and the adaptation of new cultural habits (Kim, 2012). The cultural barriers in the educational process may result in social isolation from the host country which could affect international students' sense of belonging at universities, thus in turn, influencing their wellbeing (e.g., Alshammari et al., 2023). Although existing research has explored the positive correlation between a sense of belonging and social interaction and the psychological wellbeing of international students, there is a lack of empirical research on the relationship between these three factors for CIS. Therefore, this paper aims to explore the factors that are related to their psychological wellbeing. One important factor may be that of sense of belonging.

Sense of belonging

Sense of belonging refers to the experience of being personally involved in a system or environment, making people feel like an integral part of it (Hagerty et al., 1992). Despite the widely recognized complexities surrounding the definition, conceptualization, and measurement of the "belonging" construct (see Allen et al., 2021, for related discussion), it has been most commonly defined in an education context, as "the extent to which students feel personally accepted, respected, included, and supported in the school's social environment" (Goodenow and Grady, 1993, p. 60); although, this was derived from work with adolescent (non-university) students. According to the belongingness hypothesis (Baumeister and Leary, 1995), there is a fundamental "need" to belong and to form and maintain positive interpersonal interactions with others and that a lack of this "need" can adversely impact upon one's psychological wellbeing and distress as well as other important outcomes at university, such as motivation, academic self-assurance, academic participation, and overall performance (Rehman et al., 2024). Indeed, several studies have demonstrated positive relationships between sense

of belonging and psychological wellbeing (see Allen et al., 2021). These associations have also been demonstrated among students in higher education (Allen and Kern, 2017; Dost and Smith, 2023; Ndukaihe and Nwafor, 2022) and among international students (e.g., CIS in Australia), where lack of belonging has been found to be associated with feelings of grief (e.g., Zhao et al., 2023).

A sense of belonging would therefore seem an important construct to understand and influence, to support the psychological functioning of students. Indeed, Allen et al. (2021) introduced an integrative framework for understanding belonging that focuses on four interrelated components: competencies; opportunities; motivations; and perceptions. For example, opportunities to develop interpersonal relationships (second component) can be considered a component of belonging but also a component that gives rise to belonging (Allen et al., 2021). Thus, conceptually, interpersonal relationships could be considered a component of, and enabler to, belonging. Indeed, studies among CIS have shown that social interaction, and the pressures associated with this, are often associated with a lower sense of belonging (e.g., Wang, 2018) and feelings of isolation and loneliness (Holliman et al., 2023). In the present study, we consider social interaction as a possible predictor of belonging; but also acknowledge it could be considered an aspect of it.

Social interaction

Studies have shown that social interaction is positively associated with psychological wellbeing at university (e.g., Caligiuri et al., 2020; Trolian et al., 2020). For example, Caligiuri et al. (2020) investigated whether a semester-long classroom experience designed to promote social interaction between international and domestic students would increase international students' sense of belonging and social support. The results showed that by enhancing students' social interactions, their sense of belonging also increased significantly. In addition, for CIS, Wang et al. (2015) found that social connections (e.g., friendships) are a major factor in predicting wellbeing (satisfaction).

Peer relationships and teacher-student interactions are frequently examined as indicators of social interaction (Díaz-Iso et al., 2020; Meeuwisse et al., 2010). According to the previous literature, peer-relationship and teacher-student interactions are positively associated with the psychological wellbeing among university students respectively (Wu and Dong, 2024). Also, peer relationships and teacher-student interactions may relate to the sense of belonging (Larsen and James, 2022; Van Herpen et al., 2019; Yao, 2015).

Peer relationship

Some studies indicate that there is a positive relationship between peer relationships and students' wellbeing (e.g., Wu and Dong, 2024). Research has shown that university students with positive peer relationships felt more "at home" on their studies with a heightened sense of belonging (Meeuwisse et al., 2010). Other studies have shown that peer support is associated with improvements in psychological wellbeing, self-esteem and effective coping, as well as reductions in depression, loneliness and anxiety

(Richard et al., 2022). In addition, Kibret and Tareke (2017) looked at the impact of peer support on the mental health of university students. Their research shows that peer support is an important predictor of student psychological wellbeing, highlighting the influence of peer relationships in the university environment. However, there have also been contradictory findings observed (e.g., John et al., 2018). Peer interaction with students from different countries may pose distinct challenges for CIS (Spencer-Oatey et al., 2017) leading to exacerbated feelings of lack of belonging and discomfort (e.g., Holliman et al., 2023).

Student–teacher interaction

Strong teacher-student interaction is associated with higher levels of students' sense of wellbeing. Research has found that certain teacher traits such as approachability and empathy, are perceived to positively affect students' sense of wellbeing (Baik et al., 2019). Thomas (2012) reported that to nurture "belonging," academic staff are central agents in this process. Frequent and positive teacher-student interactions can improve students' sense of belonging to the institutions (Tinto, 2015). This was also evidenced in a study by Meehan and Howells (2018) where 530 students completed open-ended questions using a qualitative research methodology to determine students' perceptions of living in university. The findings suggested that student-teacher interaction played a key role in increasing their sense of belonging. They also emphasized that building relationships of mutual trust and respect is central to student success and a sense of belonging. They concluded that university staff (academic staff, administrators and academic support staff) play an important role in supporting students to "connect" with the university by engaging in regular, open and clear communication, building stable relationships and showing genuine care and empathy for the challenges faced by students in transition. However, some researchers have come to contradictory conclusions. Rivera Munoz et al. (2019) interviewed undergraduate students who reflected on their interactions with teaching staff (lecturers and tutors) during their first year. The results showed that students reported that positive interactions helped to influence their engagement with learning, but the benefits of their interactions with teachers did not extend beyond the classroom to help them develop a sense of belonging to the university. Moreover, Rivera Munoz et al. (2019) only included first-year students. Regarding CIS, specifically, where pre-tertiary education in China is typically teacher-centered and exam-driven (O'Dea, 2023), such teacher-student relationships can lead to a sense of alienation between students and lecturers, which may affect their adjustment.

Summary, rationale, and research questions

It has been demonstrated in separate studies that students' social interaction (i.e., peer and teacher-student relationships) is associated with their sense of belonging at university (e.g., Hussain and Jones, 2021) and that sense of belonging at university is, in turn, associated with their psychological wellbeing (e.g., Ndukaihe and Nwafor, 2022). However, there remains a paucity of work examining these relationships within a single study, especially

among CIS in the UK, who may have different motivational profiles and learning strategies relative to UK students (Lo, 2024), and where social interaction (Mori, 2000), sense of belonging (Chen and Zhou, 2019), and psychological wellbeing (Wang, 2018) are reportedly of concern. It is also important to examine both independent and mediating effects, given that sense of belonging might mediate the observed relationships between peer and teacher-student interactions and psychological wellbeing (this remains an empirical question).

The present study therefore examines the relationships between students' social interaction (i.e., peer and teacher-student relationships), sense of belonging at university, and psychological wellbeing among CIS in the UK. The findings may have important implications for educators and researchers, who are seeking to understand and positively influence subject wellbeing of CIS via knowledge of social interaction with peers and teachers and sense of belonging. Taken together, the current study addressed two major research questions:

1. What is the bivariate relationship between social interaction (i.e., peer and teacher-student relationships), sense of belonging at university, and psychological wellbeing among Chinese international students in the UK?
2. Does sense of belonging at university have a mediating effect between peer relationships and psychological wellbeing, and between teacher-student interactions and psychological wellbeing among CIS in the UK?

Method

Sample and procedures

A sample of 116 Chinese international (overseas) were recruited from several London-based higher education institutions (universities) in the UK that required "a competent level of English proficiency" to gain entry; however, 31 were excluded due to incomplete responses (where their browser was closed prior to submitting their data), leaving a final sample of 85 participants.[1] Among the sample, 17 were male and 65 were females, with one participant identifying as non-binary and two participants did not wish to disclose their gender. Participants were recruited from all three undergraduate levels of study: Year 1 ($N = 12$; 14%); Year 2 ($N = 31$; 36%); and Year 3 ($N = 42$; 49%). A combination of convenience and self-selective sampling approaches were used. The selection criteria were not limited to any particular ability group; all eligible students (Chinese and currently studying in UK higher education institutions) were invited to participate in this research. Participants were aged between 18 and 26 ($Mage = 20.56$ years; $SD = 1.14$).

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1 A priori power analysis was conducted using G*Power 3.1 (Faul et al., 2009) to determine the required sample size for detecting a medium effect size ($f^2 = 0.15$) in a linear regression model with two predictors, at $\alpha = 0.05$ and power $= 0.80$. The analysis indicated that a minimum of 68 participants would be sufficient. The actual sample size of 85 exceeds this threshold, suggesting adequate power for detecting mediation effects using the PROCESS macro.

Ethical approval was granted by the University College London internal ethics committee after ensuring adherence to the BPS codes and guidelines (Project code: PHDE0058_23-24; date of approval 23 January 2024). Once ethical approval was obtained, most participants were recruited through WeChat and Xiaohongshu (a Chinese social networking and e-commerce platform), where they were signposted to the online Qualtrics link. Participants were first presented with an information sheet, which introduced the research and made participants aware of their rights. Those who wished to continue were then presented with an informed consent form to confirm their willingness to participate. Participants then completed an online questionnaire to ascertain demographic details and to measure the core variables in this study (i.e., peer interactions, teacher-student interactions, sense of belonging, and psychological wellbeing), as detailed in what follows. After this, participants received a debrief form, which providing links to websites for psychological support tailored to student health and wellbeing. Data were collected over a 3-week period in the spring term in the year 2024.

Measures

All measures in this study were presented in the English language and selected based on their established validity, as reported in previous research, and their suitability for the sample. These measures have been commonly used in prior studies involving university student populations in the UK.

Social interactions

The scales measuring social interactions were based on an earlier qualitative study by (Severiens et al., 2006) whereby 138 students (minority and majority students) were interviewed and asked about their social and academic experiences during different periods of their studies. Based on these interviews, scales for student-teacher interactions and peer interactions were constructed. The CFA results (see Meeuwisse et al., 2010) showed good model fit (CFI = 1.00), indicating that the scale can be used to measure students' social interactions in higher education. For *peer interaction* participants completed a 13-item scale, e.g., "I have close interpersonal relationships with fellow students." All items were rated on a Five-point Likert scale ranging from 1 (completely incorrect) to 5 (completely correct). Cronbach's alpha in the present sample: $\alpha = 0.86$. For *teacher-student interaction* participants completed a 15-item scale, e.g., "Teachers approach me to enquire about my study progress." All items were rated on a Five-point Likert scale ranging from 1 (completely incorrect) to 5 (completely correct). Cronbach's alpha in the present sample: $\alpha = 0.90$. Mean scores were computed for each scale with higher scores representing greater levels of peer and teacher-student interaction.

Sense of belonging

Sense of belonging was measured using The Imperial College Belongingness Scale for Undergraduates (Imperial College London,

TABLE 1 Means, standard deviations, and correlations between key variables ($N = 85$).

Variables	1	2	3	4
1. Peer interactions				
2. Teacher-student interactions	0.36***			
3. Belonging	0.55***	0.51***		
4. Psychological wellbeing	0.51***	0.23*	0.48***	
Mean	3.32	3.07	3.34	4.47
SD	0.63	0.71	0.61	1.26

*p < 0.05; **p < 0.01; ***p < 0.001.

n.d.). This scale provided an assessment of students' perceived connection and acceptance within the university community. It was adapted from two valid and reliable scales of Gehlbach (2015) and Yorke (2016). Participants completed a Seven-item scale, e.g., "How connected do you feel to the university staff at UK universities?".[2] All items were rated on a Five-point Likert scale ranging from 1 (Not at all) to 5 (Extremely). This adapted scale retained acceptable internal consistency (Cronbach's alpha) in the present sample: $\alpha = 0.81$. Mean scores were computed with higher scores representing a greater sense of belonging.

Psychological wellbeing

Students' psychological wellbeing was measured using The Satisfaction with Life Scale (SWLS: Diener et al., 1985). Participants completed a Five-item scale, e.g., "In most ways my life is close to my ideal." All items were rated on a Seven-point Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). Cronbach's alpha in the present sample: $\alpha = 0.86$. Mean scores were computed with higher scores representing higher level of positive psychological wellbeing.

Results

Descriptive data

Table 1 shows the means, standard deviations, and zero order correlations for all core measures in this study.

It can be seen from Table 1, that participants scored in the middle-range, on all substantive measures in this study. It can also be seen that peer interactions, teacher-student interactions, and sense of belonging were all significantly positively correlated with psychological wellbeing, respectively. Moreover, peer interactions and teacher-student interactions were both significant predictors of sense of belonging.

Mediation analyses

To examine whether sense of belonging had a mediating effect between peer interactions and psychological wellbeing, and between teacher-student interactions and psychological wellbeing, the *PROCESS Macro v4.1* (Hayes, 2022) based on a simple mediator model (Model 4) was used to run two separate mediation models (see Figure 1 and Table 2). The indirect effect via sense of belonging was assessed by bootstrapped confidence intervals, with the recommended 5,000 resamples adopted (Preacher and Hayes, 2008). Specifically, if the confidence intervals do not contain 0, then this is considered a significant effect. As seen in Table 2, sense of belonging fully mediated the relationship between teacher-student interactions and psychological wellbeing, $\beta = 0.27$, 95% CI [0.12, 0.44], indicating a moderate effect size. The model accounted for 24% of the variance in wellbeing ($R^2 = 0.24$). Furthermore, sense of belonging partially mediated the relationship between peer interactions and psychological wellbeing, $B = 0.15$, 95% CI [0.02, 0.29], indicating a moderate effect size.[3] The model accounted for 35% of the variance in wellbeing ($R^2 = 0.35$). Moreover, the indirect effect accounted for approximately 27% of the total effect, supporting the interpretation of partial mediation.
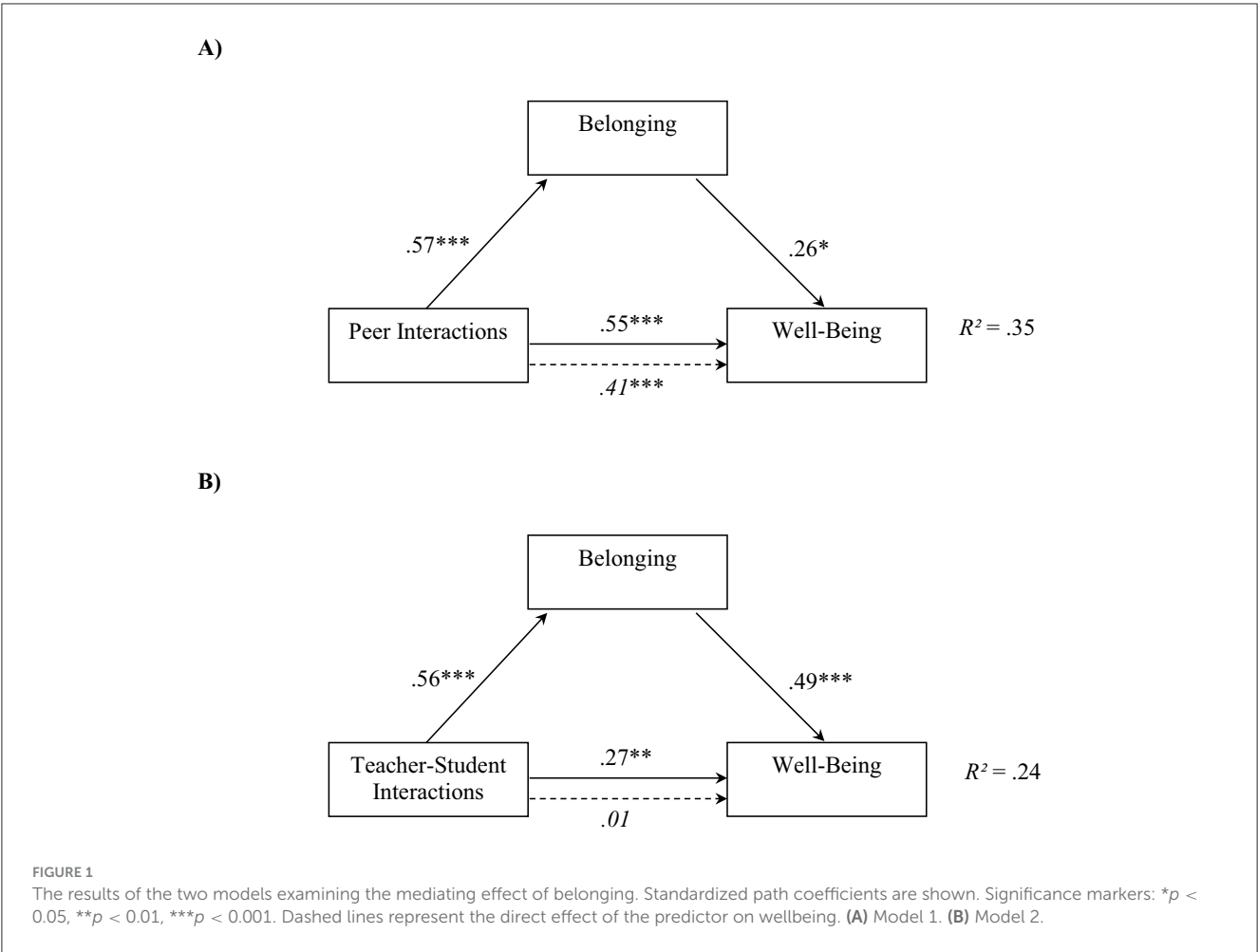
Discussion

Findings of note

In the current study, we examined the relationship between social interaction (i.e., peer and teacher-student relationships), sense of belonging at university, and psychological wellbeing among CIS in the UK. We also explored whether sense of belonging at university had a mediating effect between social interaction and psychological wellbeing.

In relation to the first research question, we found that social interaction (both forms) was significant and positively associated with sense of belonging and psychological wellbeing, and that sense of belonging and psychological wellbeing were also significant and positively related. This finding was consistent with most other work in this area demonstrating the positive effects of peer interactions on one's sense of belonging (e.g., Kibret and Tareke, 2017; Meeuwisse et al., 2010; Richard et al., 2022) also among CIS (Holliman et al., 2023; Wang, 2018) where belonging and discomfort might result from those distinct challenges associated with socially interacting with students from other countries (Spencer-Oatey et al., 2017). It was also consistent with most other work on teacher-student relationships, indicating that positive relationships with teachers, who are central agents when it comes to fostering students' sense of belonging (Thomas, 2012), fosters a heightened sense of belonging among students (Meehan and Howells, 2018; Tinto, 2015). Positive associations were found between social interaction (peer and teacher-student) and psychological wellbeing: this was also consistent with our expectations and in line with most prior work (e.g., Kibret and

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2 Some adaptations were made to the scale to replace any specific references to "Imperial College" with the broader category of "UK university/UK universities."

3 Note that age and gender were found to be non-significant predictors of well-being ($p > 0.05$ in all cases) in both mediation models so were not included in the final analyses.

FIGURE 1
The results of the two models examining the mediating effect of belonging. Standardized path coefficients are shown. Significance markers: *$p <$ 0.05, **$p <$ 0.01, ***$p <$ 0.001. Dashed lines represent the direct effect of the predictor on wellbeing. **(A)** Model 1. **(B)** Model 2.

Tareke, 2017) and among CIS (Holliman et al., 2023; Wang et al., 2015). Finally, we found that sense of belonging at university was positively associated with psychological wellbeing. This was consistent with our expectations and the findings from prior work albeit among non-CIS (e.g., Allen et al., 2021; Allen and Kern, 2017; Dost and Smith, 2023; Ndukaihe and Nwafor, 2022) and CIS (e.g., Holliman et al., 2023; Zhao et al., 2023). Thus, we were able to replicate the findings from prior work with our sample of CIS.

In relation to the second research question, we found that sense of belonging at university "fully" mediated the relationship between teacher-student relationships and psychological wellbeing and "partially" mediated the relationship between peer interactions and psychological wellbeing. This aligns with the Integrative Framework of Belonging (Allen et al., 2021), which views belonging as arising from competencies, motivations, perceptions, and especially social opportunities (such as social interactions between peers and teachers). The full mediation by belonging in the teacher-student interaction pathway suggests such interactions influence wellbeing indirectly. In contrast, peer interactions had both direct and indirect effects, indicating their broader role. These results highlight how different social interactions contribute to belonging and, in turn, to CIS students' wellbeing, reinforcing the framework's emphasis on the central and multifaceted role of belonging in supporting psychological health in university contexts.

TABLE 2 Mediation effects of belonging on the relationships between social interaction (peer, teacher-student) and psychological wellbeing ($N = 85$).

Effects	b	95% CI	
		Lower	Upper
Total (peer interactions on wellbeing)	5.50	3.69	7.30
Direct (peer interactions on wellbeing)	4.04	1.90	6.17
Indirect (mediation)	1.46	0.22	2.92
Total (TS interactions on wellbeing)	2.44	0.59	4.28
Direct (TS interactions on wellbeing)	0.01	−2.03	2.05
Indirect (mediation)	2.43	1.10	3.75

It could also be that, from the perspective of students, teacher-student interactions are more limited to the classroom and may not have positive benefits outside the classroom. As mentioned earlier in Rivera Munoz et al. (2019), positive teacher-student interactions help to influence their learning engagement, but this positive relationship does not extend to other variables outside the classroom. Therefore, the positive relationship between interaction with teachers and psychological wellbeing may be neutralized by

the sense of belonging to the universities among CIS. Similar results were also found in Brandseth et al. (2019), which used a cross-sectional study to investigate the mental wellbeing of 574 Norwegian high school students aged 16–17 years, as well as the relationship with teacher support and class belonging. The results showed that class belonging partially mediated the observed relationship between teacher support and mental health. The results of Brandseth et al. (2019) are the same as the conclusions of this paper, except that the study involved a different age group, a different country, and a different ethnic group. This suggests that the results seem to be replicable across different samples. Moreover, the peer relationships can be divided into formal and informal types and are not limited to the classroom. Peer relationships do not seem to be limited to the classroom but also include social connections in daily life (Roffey, 2013), which may help reduce their sense of loneliness and thus improve the psychological wellbeing (Smith et al., 2022) of CIS. Therefore, the mediating effect of sense of belonging on peer relationships may less than that of teacher-student relationships.

Taken together, it would seem the positive relationship between peer relationships and wellbeing can only be partially mediated by a sense of belonging to the university.

Implications for practice

The findings of this study have valuable implications for individuals, universities, and the government more broadly. For students, this study provides direction for CISs in the UK on how to address their psychological problems. For example, they should seek opportunities to increase their social interactions, such as participating in extracurricular activities (see De Sisto et al., 2021). This study also has practical implications for educators and researchers particularly within the UK higher education sector regarding how best to support the wellbeing of CIS. Universities are encouraged to create opportunities and help foster positive social interactions; for example, studies such as Wei et al. (under review) have shown that university peer mentoring programs (sometimes also facilitated by a personal tutor), that focus on skills development but also provide opportunities for more casual meetups and informal discussions, accommodating different personality traits and preferences, may be particularly effective for enhancing the social integration of international students. Staff development initiatives that emphasize relational practices, along with strategies to reduce perceived interaction barriers and enhance students' sense of belonging, are also likely to produce positive outcomes for students. Indeed, such initiatives may help promote positive social interactions between students and also between students and staff which could promote their sense of belonging at university and, in turn, their psychological wellbeing.

Limitations and future directions

There are some limitations of this study that will now be acknowledged. First, the sample size, while sufficient, was relatively small, and comprised solely of Chinese international students studying in the UK and for the majority of students, at London-based universities. As such, the findings cannot be generalized to Chinese and other international students who may be studying in other overseas nations. Similarly, the vast majority of participants in this study were female. While this reflects the general trend in UK universities, where the majority of both home and international students are female, the findings may be less generalizable to male students. Second, quantitative approaches, like that employed in the present study, are insufficient for exploring the nuances associated with students' experience of university (i.e., qualitative approaches, may provide unique insights regarding the complex interplay between social support, sense of belonging to university, and psychological wellbeing). Third, the study focused solely on interactions with peers and teachers; however, other cross-cultural work has considered the important roles of the family (and also friends) in relation to psychological wellbeing (see Brannan et al., 2013). It also did not measure other factors of potential importance when adjusting to a new country of study, such as English language proficiency level (Xiong et al., 2025). Additionally, it did not consider other possible moderating variables, including independent learning strategies, self-efficacy, and mindset. These other variables could be captured in future research replicating the design of the present study. Fourth, it is recognized, that some of the substantive constructs in this study might have been measured more comprehensively. For example, it is widely acknowledged that psychological wellbeing is a complex and multidimensional construct (Buzzai et al., 2020). In the present study, and in line with some other work in this area (e.g., Holliman et al., 2022), we focused on life satisfaction as a proxy for psychological wellbeing: this is most often considered as a hedonic measure of wellbeing (see Ryan and Deci, 2001). However, future work might focus on other dimensions of psychological wellbeing, such as those "eudaimonic" aspects relating more to psychological functioning and living well (see Schotanus-Dijkstra et al., 2016). Similarly, there exists no consensus, gold-standard measure for sense of belonging (see Allen et al., 2021) and it is likely the measure employed in the present study may not have adequately captured all aspects of this construct. As such, future researchers may consider adopting alternative measures such as the University Belonging Questionnaire (Slaten et al., 2018) to further explore which dimensions of "sense of belonging" may have most impact on wellbeing. Additionally, all participants were self-selected and completed self-report measures; as such, issues of sampling bias, social desirability, and inaccurate responding cannot be ruled out. Finally, this study employed a cross-sectional correlational design, which limits the extent to which we can infer directionality and causality (e.g., it could be, that those who are feeling well have greater capacity and resource to interact positively with others). Future researchers may consider adopting longitudinal design or experience sampling methodology to explore these predictive relationships further.

Conclusion

The present study showed that there is a positive relationship between social interaction (peer and teacher-student interactions), sense of belonging to university, and psychological wellbeing (specifically, "life satisfaction," as one dimension of psychological

wellbeing) among a sample of Chinese international students studying at UK universities. Moreover, sense of belonging at university was found to partially mediate the relationship between peer interactions and psychological wellbeing and to fully mediate the relationship between teacher-student interactions and psychological wellbeing. This finding highlight how different social interactions (e.g., peer and teacher-student interactions) contribute to belonging and, in turn, to CIS students' wellbeing, offering support for the Integrative Framework of Belonging (Allen et al., 2021) and its strong emphasis on the central and multifaceted role of belonging in supporting psychological wellbeing at university. Taken together these findings may have important implications for educators and researchers, who are seeking to understand and positively influence international Chinese students' psychological wellbeing via interventions (activity or endeavor) that focuses on supporting students to positively interact with peers and teachers and gain a heightened sense of belonging at university.

Data availability statement

The datasets presented in this article are not readily available because due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available. Requests to access the datasets should be directed to Andrew Holliman, a.holliman@ucl.ac.uk.

Ethics statement

The studies involving humans were approved by University College London's Faculty Research Ethics Committee (REC). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

HZ: Writing – original draft, Writing – review & editing, Conceptualization, Data curation, Methodology, Project

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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