

Bilecen, Başak; Diekmann, Isabell; Faist, Thomas

**Article — Published Version**

## The puzzle of loneliness: A sociostructural and transnational analysis of International Chinese Students' networks in Germany

International Migration

**Provided in Cooperation with:**

John Wiley & Sons

*Suggested Citation:* Bilecen, Başak; Diekmann, Isabell; Faist, Thomas (2024) : The puzzle of loneliness: A sociostructural and transnational analysis of International Chinese Students' networks in Germany, International Migration, ISSN 1468-2435, Wiley, Hoboken, NJ, Vol. 63, Iss. 2, <https://doi.org/10.1111/imig.13298>

This Version is available at:

<https://hdl.handle.net/10419/319358>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<http://creativecommons.org/licenses/by-nc-nd/4.0/>

# The puzzle of loneliness: A sociostructural and transnational analysis of International Chinese Students' networks in Germany

Başak Bilecen<sup>1,2</sup>  | Isabell Diekmann<sup>2</sup> | Thomas Faist<sup>2,3</sup> 

<sup>1</sup>Department of Sociology/ICS, University of Groningen, Groningen, The Netherlands

<sup>2</sup>Faculty of Sociology, Center on Migration, Citizenship and Development, Bielefeld University, Bielefeld, Germany

<sup>3</sup>Middle East Technical University (METU), Department of Sociology, Ankara, Turkey

## Correspondence

Başak Bilecen, Department of Sociology, Interuniversity Center for Social Science (ICS), Grote Rozenstraat 31, Building 2222 – Room 305, 9712 TG Groningen, The Netherlands.

Email: [b.bilecen@rug.nl](mailto:b.bilecen@rug.nl)

Website: <https://www.rug.nl/staff/b.bilecen/>

## Funding information

DFG, The German Research Foundation

## Abstract

The experience of loneliness is common among international students who study in a foreign country, away from their home. Loneliness refers to the difference between the actual and desired social relationships highlighting not only the quantity but also the quality of relationships. We argue for a perspective on loneliness that emphasizes its social context rather than relying mainly on individualistic or psychological interpretations prevalent thus far. In this article, we explore network predictors of loneliness among Chinese international students in Germany. Through our analysis of a unique data set, we show that when compared to the local students, international students tend to feel lonelier. Surprisingly, when we discover that when international students have the same network size, those with more emotionally supportive ties tend to experience more loneliness compared to those with fewer emotionally supportive ties. Not surprisingly, having a romantic partner is associated with lower levels of loneliness, especially when they also live in the country of education. Additionally, we find that international Chinese students who struggle to form cross-national friendships report higher levels

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2024 The Author(s). *International Migration* published by John Wiley & Sons Ltd on behalf of International Organization for Migration.

of loneliness. By delving into these findings, our research offers a sociological account of loneliness among international Chinese and local students in Germany.

## INTRODUCTION

Since the year 2000, there has been a consistent upward trend in the number of students who choose to pursue higher education degrees in foreign countries. According to UNESCO statistics (2019), there were approximately 5.3 million international students worldwide in 2017, with around 15% originating from China. China's open-door policy in the 1980s played a significant role in this growing trend, as an increasing number of students from China sought education opportunities abroad, often in English-speaking countries. In recent years, there has been a notable increase in the number of Chinese students choosing to study in Germany, with Chinese students now constituting the largest group of incoming students from any single country over the past decade. National programs, global policy initiatives, and institutional networks and contexts among universities play crucial roles in promoting and constraining international student mobility overall, including the movement from China to Germany (Brooks & Waters, 2011; Shields, 2013). As of 2019, Chinese students accounted for 13.3% of all international students in Germany (Wissenschaft Weltoffen, 2022). This study aims to contribute to the understanding of feelings of loneliness among international Chinese students in Germany, a topic less explored compared to English-speaking countries (e.g. Poyrazli & Lopez, 2007; Sawir et al., 2008; Yeh & Inose, 2003), although Germany has long been a magnet for international students (Guruz, 2011). For example, as recently as 2019, Germany secured the fourth position as the most sought-after country for international students globally (Wissenschaft Weltoffen, 2022). Nevertheless, only a few studies investigate the experiences of Chinese international students in non-English-speaking European countries like Germany (e.g. Bilecen et al., 2023; Jiang & Kosar Altinyelken, 2020). Moreover, loneliness has been identified as a fundamental risk factor for depression and anxiety, and it has detrimental effects on overall health and well-being (Cacioppo & Patrick, 2008; Hawkey & Cacioppo, 2010). Therefore, our study on loneliness among international Chinese students in Germany is crucial, as loneliness is a well-established risk factor for adverse health outcomes and academic challenges. In this paper, we compare the extent of feelings of loneliness among international students to those of local<sup>1</sup> ones and then focus our analysis on explanatory factors of loneliness among international students.

Previous research has demonstrated the advantages of studying abroad, not only in terms of accumulation of human capital and skills, but also in terms of forming new connections with others, expanding social networks, and broadening students' horizons (Bilecen, 2014, 2024; Findlay et al., 2011; Mazzarol & Soutar, 2001; Teichler, 2017). However, when it comes to expansion of their social networks, which is acknowledged to be crucial for personal growth and success, there is substantial evidence suggesting that international students tend to form friendships primarily with other international students, rather than with local students who belong to the majority population of the country of education, although they may desire such cross-national friendships (e.g. Beech, 2019; Bilecen, 2014; Spencer-Oatey et al., 2017; Williams & Johnson, 2011; Yan & Berliner, 2013). While international students strive to make new friendships, they often leave behind their families, neighbours, and friends in their countries of origin, which can lead to feelings of social isolation and loneliness (Tsai et al., 2017). Additionally, the mobility of their friends further disperses international students' social networks geographically (Beech, 2015; Bilecen, 2014). These changes in personal relationships as well as difficulties in making new friendships can significantly impact the well-being and feelings of loneliness experienced by international students in their new social and academic environments (Bilecen et al., 2023; Hechanova-Alampay et al., 2002; Hendrickson et al., 2011; Lee & Rice, 2007; Sawir et al., 2008).

Loneliness is a relational concept indicating a subjective negative feeling that arises when there is a perceived discrepancy between the desired and actual social relationships one has (Peplau & Perlman, 1982). While it is closely related to social isolation, which refers to the objective absence of social relationships, loneliness goes beyond mere absence and involves a subjective evaluation of those relationships. Thus, the feeling of loneliness encompasses both the quantity and quality of social ties (Weiss, 1973). For instance, individuals may feel subjectively lonely even if they have an objectively large social network, especially when they perceive a lack of meaningful connection in those relations (De Jong & Van Tilburg, 2006). For Simmel, loneliness was not viewed as an individual pathology but rather as an outcome of societal structure, because social context is very decisive of how social interactions are patterned that contributes to the feelings of loneliness (Donbavand, 2020).

Against this background, our study aims to investigate loneliness as an outcome of social structure, examining its manifestation within personal networks, illustrated by the example of international Chinese students in Germany. Our contribution to literature is two-fold. Theoretically, following Simmel (1950) and Weiss (1973), we argue that loneliness cannot be framed as a solely individual issue that is detached from broader social considerations. Empirically, we investigate systematically how personal networks offer insights into loneliness and not merely metaphorically – a rather uncommon practice in international student mobility literature due to data limitations. Given our unique data set and primary objective of examining network-related determinants of loneliness, a quantitative approach appears particularly apt for investigating loneliness.

## THEORETICAL BACKGROUND AND HYPOTHESES

Previous studies have made a distinction between social and emotional loneliness (Green et al., 2001; Weiss, 1973, 1974). While social loneliness is conceptualized as a sign of insufficient social relationships, the feeling of not belonging or being poorly integrated within a community, attributing it to a lack of associative and affiliative ties; emotional loneliness is thought to arise from a deficiency in intimacy and profound understanding. This kind of emotional void is not only associated to be filled by romantic relationships but also extends to other close confidants (Weiss, 1973). While this approach suggests the importance of personal networks individuals are embedded in, it also risks reverting to individualistic critiques of the psychodynamic tradition, as it highlights the importance of relationship quality and the individual's capacity to cultivate meaningful connections (Donbavand, 2020). From a sociological standpoint, Simmel acknowledges that even liberated modern individuals can feel out of place in their social environment, pinpointing group structure as a key contributing factor and does not pin down loneliness on the individual level. Simmel's theory of intersecting social circles suggests that modernity leads to brief interactions with individuals confined to specific social circles, potentially contributing to the prevalence of loneliness. For him, relationships evolve through diverse shared experiences, generating the interpersonal information crucial for understanding others. Each new situation in which individuals engage with someone offers a fresh perspective, contributing to the construction of a multifaceted representation of them, and thereby not categorizing others in stereotypes. Thus, structural loneliness arises from limited opportunities to experience the same people across multiple contexts, influencing the depth of connections (Donbavand, 2020; Simmel, 1950).

Loneliness is widely acknowledged as a prevalent experience among international students, including those from China (Bilecen et al., 2023; Lin & Kingminghae, 2014; Tsai et al., 2017). While some students may perceive studying abroad and being away from home as personally enriching, socially and intellectually stimulating experiences, others may find this separation from home, established social circles, loved ones, and daily routines to be overwhelming. This physical distance from family and friends, struggles in establishing new meaningful multiple-context relationships, the responsibility of managing their own lives, unfamiliarity with local norms and values, lack of emotional support in a new setting where international students often live independently for the first time, and the pressure to succeed academically and obtain a degree can all have adverse effects on students' well-being leading to increased feelings of loneliness. Local students might have existing friendships and family ties, making

it somewhat easier for them to navigate sociocultural and academic environments. In contrast, international students need time and effort to build social networks. As they are newcomers, we expect that international students lack exposure to the same people in various contexts, such as at home, university, and leisure-time activities, whereas local students are more inclined to have such relationships that span multiple contexts. In that regard, we hypothesize:

**H1.** International Chinese students report higher levels of loneliness in comparison to the local students.

Generally, a larger social network is strongly associated with lower levels of loneliness because it indicates the potential for more diverse and supportive ties (Hawkey et al., 2005). Research on international student mobility also provides ample evidence on the importance of having a large circle of friends for a satisfying study abroad experience, as it can help reduce feelings of loneliness and homesickness (Hendrickson et al., 2011; Pekerti et al., 2020). In particular, forming new friendships with local students has been found to be beneficial, and is associated with less homesickness, greater satisfaction with the international education experience (Hendrickson et al., 2011; Ward et al., 2001). However, international students often face cultural and linguistic barriers to initiate new social relationships (Bilecen, 2024; Sawir et al., 2008; Yan & Berliner, 2016). Although in Germany educational programs are offered in both English and German, the latter is the predominant language in administrative contexts and beyond the campuses. This linguistic dynamic may present an additional challenge for international students, compelling them to excel simultaneously in two languages to navigate their studies and daily life in the country. In Germany, as opposed to the extensively researched English-speaking countries, Chinese international students must navigate not only new sociocultural and academic environments but also linguistic contexts. This dual challenge can exert added pressure on students, requiring time investment in language acquisition that might otherwise be dedicated to building social connections. Conversely, this linguistic barrier could have an exclusionary impact, limiting access to certain spaces and impeding interactions with German-speaking students and the broader population (Bilecen, 2024). Thus, linguistic barriers might hinder international students to foster new social relationships and feel lonely. Thus, we argue that the larger the personal network, the less lonely international Chinese students will feel, as it provides access to various sources of support and more opportunities to have multiple-context relationships. Based on this reasoning, we hypothesize:

**H2.** International Chinese students who have larger personal networks will experience lower levels of loneliness.

Having a substantial number of social relationships can translate into a larger pool of supportive resources indicating relationship quality. Among these resources, emotional support plays a crucial role and is defined as the provision of comfort, encouragement and acceptance (Taylor, 2011), and understanding to individuals in the form of expressions such as caring, affection and empathy (Fischer, 1982; Small, 2017). These ties are characterized as close and strong relationships in which individuals place trust, confide in, and discuss personal matters with (Fischer, 1982; Wellman, 1979). In general, absence of emotional support has been conceptualized as a major determinant of loneliness (Weiss, 1974). The quantity and quality of these ties that can provide emotional support are considered important factors in reducing loneliness among university students (Deniz et al., 2005). To put it differently, individuals may be surrounded by many others and yet feel lonely if their social ties do not meet their needs. Additionally, having multiple connections may not necessarily fulfil their need for a confidant with whom they can share personal matters, which is equally significant. Thus, the presence of emotionally supportive ties, with whom individuals can trust, confide in and discuss personal matters, helps alleviate feelings of loneliness, as these ties serve as indicators of relationship quality. The literature on international student mobility has extensively explored the relationship between social support and well-being (Bilecen, 2014; Diehl et al., 2018; Sawir

et al., 2008). For instance, Sawir et al. (2008) found that those international students who rely on personal relationships for emotional support such as through talking with family and friends in their countries of origin felt less lonely. Against this background, we hypothesize:

**H3.** International Chinese students who have networks consisting of a high share of emotionally supportive ties will experience lower levels of loneliness.

The transnationality concept highlights the idea that once individuals migrate they tend to keep their family and friendship ties in the countries of origin and elsewhere, while making new ones (Faist, 2000; Faist & Bilecen, 2019). This is also the case for international students. Once they arrive in the country of education, they do not suddenly disrupt all their existing social relationships that might be geographically dispersed while seeking to build new friendships (Beech, 2015; Bilecen, 2014, 2024; Brooks & Waters, 2010; Robinson et al., 2024). Within these transnational networks, exchanges of diverse resources, such as information and emotional support take place, facilitated by telecommunication technologies (Beech, 2015; Bilecen, 2014, 2024). While transnational social relationships might function as a known, safe haven for supporting emotionally international students, newly formed local ties in the country of education also serve purposes of more hands-on support such as getting help from friends in the administrative university matters, or information on documents for residence permit and alike (Beech, 2015; Bilecen, 2014). All those social relationships have an influence on the feelings of loneliness international students might experience. For example, studying Chinese international students' experiences in the U.S., Yan and Berliner (2013) pinpoint the importance of local social relationships, especially for those whose transnational ties to the country of origin are severed. Moreover, studying the young population in the UK, face-to-face contacts such as going out with friends was associated with reduced loneliness among young individuals (Marquez et al., 2023). Locally nearby social relationships might take on different roles of social support, such as having important information about the university administration, but more importantly, they might make the students feel more belonging to a community, whether it is a university, student or co-ethnic community in a novel environment. Thus, we expect that the location of social ties will not significantly influence international students' loneliness. This is because both local and transnational ties fulfil different functions: local ties offer practical, hands-on support in daily matters, while transnational ties are useful for emotional support and can be maintained via internet and telecommunication technologies:

**H4.** The location of network members does not have an effect on the feelings of loneliness among international Chinese students.

According to loneliness research, having a romantic partner is found to be the most powerful protective factor against loneliness (Dykstra & Fokkema, 2007; Hawkey et al., 2005). There is also evidence for it among international students (Lin & Kingminghae, 2014; Yan & Berliner, 2011, 2013). Moreover, societal and cultural expectations regarding the establishment of a romantic partnership at a certain age may contribute to an increased feeling of loneliness when one is lacking a partner (Ponzetti Jr., 1990). Given these expectations and the influence of contemporary societal transformations, romantic relationships and intimacy have become essential for individuals in finding meaning in life (Beck & Beck-Gernsheim, 1995). For instance, studying romantic relationships of international Chinese students in Thailand, Lin and Kingminghae (2014) found a significant effect of having a partner who was also living in the country of education is associated with lower levels of loneliness in comparison to those international students without partners. Taking the Simmelian's perspective, it could be posited that romantic relationships are one of the few multiple-context relationships in contemporary societies. Within romantic partnerships, individuals encounter each other across various social contexts and roles, thereby transcending the state of psychological anonymity (Simmel, 1950). This, in consequence, can mitigate the 'conditions for the spread

of loneliness' (Donbavand, 2020). Building upon this evidence and argument, we expect to have a positive effect of having a romantic relationship on loneliness as well as having the partner also living in the country of education. Thus, we hypothesize:

**H5.** International Chinese students who are involved in romantic relationships will report lower levels of loneliness.

**H6.** International Chinese students with a partner living in Germany experience lower levels of loneliness compared to their counterparts who have partners living abroad.

Lower levels of loneliness are linked not only to having supportive social relationships but also having new friendships for international students. The desire to form new friendships, especially with local students, is frequently unfulfilled, adding to the stress and loneliness experienced by international students (Yan & Berliner, 2013; Zhang & Brunton, 2007). Previous research supports the notion that international students, in general, aspire to establish friendships with both local and international peers (e.g. Beech, 2015; Hendrickson et al., 2011; Marginson et al., 2010). Increased interaction with local students has been found to reduce feelings of loneliness among international students (Ward & Rana-Deuba, 2000). However, international students from China and other Asian countries often encounter difficulties in forming new friendships, especially with local students, as evidenced across various country contexts (e.g. Lehto et al., 2014; Yan & Berliner, 2013; Zhang & Brunton, 2007). For example, Zhang and Brunton (2007) found that international Chinese students in New Zealand reported higher levels of loneliness primarily due to a lack of friendships with local peers and limited participation in shared activities. Similarly, Walsworth et al. (2021) found that international students who succeeded in forming friendships with local Canadian students enjoyed greater cultural and social satisfaction during their studies, indicating enhanced well-being. Applying the Simmelian's perspective, friendships with both local individuals and those from different cultural backgrounds serve as connections across multiple contexts for international students. These friendships extend beyond campus interactions to include shared sports and leisure activities, facilitating increased interpersonal interaction and the exchange of information crucial for deeper understanding. This process of getting to know someone at a deeper level ultimately would reduce feelings of loneliness among international students. Against this background, we expect to find a positive correlation between the frequency of difficulties in making new friendships and loneliness levels of international Chinese students. Our hypothesis is:

**H7.** International Chinese students who encounter difficulties more often in establishing cross-national friendships will report higher levels of loneliness.

## DATA AND METHODS

The data used in this article were collected for the Bright Futures Project survey, a study of international Chinese and local students in Germany and the UK, conducted by a team of multinational researchers. For the data collection in Germany, the Ethics Committee of Bielefelde University granted its approval.

A two-stage stratified sample design was used to collect the data in Germany. Initially, all 110 German universities hosting more than 30 international students from China were stratified based on their ranking according to the QS World Ranking. This ranking was chosen due to feedback from qualitative interviews, where international students indicated their preference for consulting QS university rankings when selecting their study destinations. Subsequently, 63 universities were randomly contacted from each of the 20 strata. Of the 24 universities that agreed to participate, university administrators reached out to all Chinese international students via email to invite them to participate in the web survey. Additionally, some universities selected a random sample of German

students. Qualtrics was used as the online platform to conduct the web survey. The survey instrument for local and international students was generated in English by all the team members. Later, multiple professional translators translated them into German and Chinese. For the German translation, a native speaker team decided on the final wording, while for the Chinese version, a professional linguist was hired to merge all different translations to ensure that the meaning of the questions was kept. The team in Germany also conducted cognitive interviews with Chinese international students to ensure that the survey questions were well understood as initially intended. The fieldwork in Germany took place between March 2017 and April 2018.

Our main interest in this article is several network questions developed for the Bright Futures project survey. At the end of the survey, respondents were also given the option to continue with an additional network section. First, the respondents were asked the following name-generator question: 'Other than your parents, who are the people you would consider important to you?'. By asking this question, our aim was to elicit strong ties who are perceived by the respondents to be important. The respondents were given the option to name a minimum of three and a maximum of eight persons. Second, the respondents were asked detailed questions on their named personal ties (known as *alters*) including their gender, age, educational level, nationality, geographical location, type and duration of their relationship, frequency of contact, mobility experience, and their supportive functions (emotional support, information on education). In the third and last step, to define the structure of the personal networks, they were asked to indicate whether each pair of alters knows each other or not.

The sample for our analysis contains, on the one hand, international students from China in Bachelor's and Master's level programs in Germany. In total, 812 international Chinese students participated in the survey. 512 of them agreed to take part in the added network section which is of special interest in this paper. After *listwise deletion* (in STATA) of observations with a missing value for our dependent variable or at least one of our independent variables, our final sample consists of 455 international Chinese students. As a comparison, on the other hand, we also conduct some models with local students from Germany, again using STATA's *listwise deletion*. The sample size for the local students is 336. About 70% of the respondents in both samples have been born between 1991 and 1995, meaning that they have been in their early or mid-20s during our data collection in 2017 and 2018.

## Operationalization of the variables

### Loneliness

Loneliness is the dependent variable and measured via self-assessment using one item asking the participants how often they felt lonely during the past 30 days. This common way of operationalizing the extent of different feelings can for example be found in the German Socio-Economic Panel (GSOEP). Response options on a fully verbalized five-point scale are 'none of the time (1)', 'a little of the time (2)', 'some of the time (3)', 'most of the time (4)' and 'all of the time (5)'. Due to limitations in our data set, we are constrained to employ a single-item measure, a practice not uncommon in loneliness research (see, for instance, Kempainen et al., 2023). This approach is justified by existing literature, which has demonstrated the validity and reliability of single-item loneliness measures, including those gauging the frequency of experiencing loneliness (Michalska da Rocha et al., 2018; Mund et al., 2023).

### Network size

In the framework of the aforementioned name-generator question, the participants were able to mention a minimum of three to a maximum of eight alters.



## Emotional support

After the respondents named their alters, they were also asked whether they received emotional support from them with this question: 'Have you talked about your personal and private matters with this person in the past year?' The answer was dichotomous (1=yes, 0=no). In our study, we include the number of emotionally supportive alters. This variable ranges from 0 to 8.

## Number of alters living in Germany

The participants were asked whether their mentioned alters live in their hometown in China, in China but not in their hometown, in their hometown in Germany, in Germany but not in their hometown, or in another country. In our models, we integrated the total number of all alters living in Germany, no matter in which city. This resulted in a scale from 0 to 8 alters.

## Relationship status

Relationship status is a dichotomous variable with being single as reference category (1=in a relationship and 0=not in a relationship).

## Relationship status incl. Country where partner lives

We generated a variable that informs about whether or not the participants are in a relationship and if so, whether or not the partner lives in Germany. We distinguish between partner living in Germany (0), partner living in another country (1), and not being in a relationship (2).

## Difficulties with making cross-National Friendships

The participants were asked how often they have difficulties with making friends with people who are not Chinese. Response options on a fully verbalized five-point scale are 'never (1)', 'seldom (2)', 'sometimes (3)', 'often (4)', and 'always (5)'. For our analysis, we integrated this ordinal scaled variable into our model generating several dummy-coded variables.

## Control variables

To place loneliness at the centre of our analysis and to adjust our analyses for the influence of the general satisfaction of students, we control for overall life satisfaction (from very dissatisfied (1) to very satisfied (5)). Loneliness and life satisfaction are distinct, and yet inextricably linked constructs (Bucher et al., 2019), we control for the latter to ensure the validity and interpretability of the research findings. In addition, we control for gender (1=female and 0=male) since research shows mixed effects of gender on international and local students' loneliness (Bilecen et al., 2023).

## Analytical approach

Our analysis relies on a robust and distinctive quantitative data set. We conducted our data analysis using STATA 17 with the aim of examining the predictors of loneliness among international Chinese and local students in Germany. In order to account for the nested structure of the data, where students are nested within universities, we followed Möhring's (2012) recommendation and used university fixed effects in all our linear regression models. This approach allows us to control for unobserved heterogeneity related to universities (Möhring, 2012), considering the limited number of cases at the macro level, which can pose challenges for traditional multilevel analysis.

Initially, we conducted a single model (Model 1) encompassing the entire sample, comprising both international Chinese and local students ( $N=791$ ). Model 1 incorporates student status (international/local) as the main variable, with gender and life satisfaction serving as control variables, along with the inclusion of the university fixed-effect. To analyse the relationship between network variables and students' loneliness, we ran another 10 models – seven for international Chinese students (Model 2 – Model 7) and four for local students (Model 8 – Model 11). We stepwise added the hypothesized network variables in these models. We computed one model focusing on the country where the partner lives and one model that incorporated the difficulties faced by international Chinese students in forming cross-national friendships. Models 6 and 7 were exclusively applied to international Chinese students due to the unavailability of data for local students. This selection is based on the specificity of the variables, which are particularly relevant to the experiences of international students. All models include the control variables mentioned earlier: overall life satisfaction, gender, and, the variable representing the current university of the students.

To address heteroscedasticity in the data, we employed a log-transformation of the dependent variable. This adjustment helps to ensure more appropriate modelling of the relationship between the predictors and loneliness among international Chinese and local students.

## RESULTS

### Descriptives

Table 1 provides an overview of the descriptive results for international Chinese compared to local students in Germany (where applicable). On average, international Chinese students report experiencing loneliness 'a little' to 'some of the time' (mean=2.55) and they report a higher level of loneliness compared to local students (mean=2.04). Both groups have a slightly higher proportion of female respondents. The majority of both international Chinese and local students reported overall life satisfaction. More than half of the local students were in a relationship, while less than half of the international Chinese students are (57% vs. 45%). On average, local students mention having more emotionally supportive ties than international Chinese students (5.7 vs. 3.4 alters). Most international Chinese respondents report having eight alters in their personal networks (71%), with a smaller group reporting three alters (16%), resulting in an average network size of 6.8 alters. In comparison, local students report a similar average network size of 6.6 alters. The networks of international Chinese students are more transnational, with only 1.8 alters located in Germany on average. In contrast, local students report an average of 6.1 alters residing in Germany, indicating a more locally oriented network. Approximately one-third of international Chinese students in a relationship have partners living outside of Germany (16%). For this variable as well as for the following variable on experiencing difficulties with forming cross-cultural friendships, we have no data for the local students but since their overall network seems to be quite locally oriented, we can assume that most of the local students have partners living in Germany. Approximately half

TABLE 1 Descriptives of all main and control variables.

	International Chinese students (N = 455)	Local students (N = 336)
Loneliness (range 1–5), M (SE)	2.55 (0.06)	2.04 (0.06)
% none of the time	25.93	40.18
% a little of the time	27.03	25.89
% some of the time	22.86	25.89
% most of the time	14.95	5.95
% all of the time	9.23	2.08
Network size (range 3–5), M (SE)	6.81 (0.09)	6.63 (0.11)
3 alters	16.04	13.69
4 alters	5.49	8.04
5 alters	3.30	7.44
6 alters	2.64	4.46
7 alters	1.76	5.06
8 alters	70.77	61.31
Emotionally supportive alters (range 0–8), M (SE)	3.36 (0.10)	5.65 (0.12)
0 alters	7.69	0.30
1 alter	13.63	2.68
2 alters	15.82	5.95
3 alters	20.88	14.88
4 alters	13.19	11.01
5 alters	10.33	8.33
6 alters	9.45	9.23
7 alters	5.49	16.67
8 alters	3.52	30.95
Number of persons living in Germany (range 0–8), M (SE)	1.81 (0.09)	6.08 (0.11)
0 alters	30.55	0.60
1 alter	25.27	1.79
2 alters	14.51	1.49
3 alters	12.75	14.58
4 alters	6.37	8.04
5 alters	5.27	9.82
6 alters	1.54	7.44
7 alters	2.20	16.07
8 alters	1.54	40.18
% in a Relationship	44.62	57.44
Relationship status incl. country where partner lives		
% Partner in Germany	28.35	
% Partner Abroad	16.26	
% Not in a Relationship	55.38	

TABLE 1 (Continued)

	International Chinese students (N = 455)	Local students (N = 336)
Difficulties making friends with people who are not Chinese (range 1–5), M (SE)	2.55 (0.05)	
% never	23.30	
% seldom	26.15	
% sometimes	27.25	
% often	18.90	
% always	4.40	
Life satisfaction (range 1–5), M (SE)	3.89 (0.04)	4.07 (0.06)
% very dissatisfied	0.22	1.79
% dissatisfied	2.42	8.93
% neither satisfied nor dissatisfied	26.59	10.12
% satisfied	50.11	38.69
% very satisfied	20.66	40.48
%Women	56.70	58.93

of the international Chinese students report facing difficulties making cross-national friendships often, sometimes, or always.

## International Chinese and local students compared

Initially, we tested [H1](#), which suggests that international Chinese students experience higher levels of loneliness compared to local students. Our analysis (Model 1, [Table 2](#)) indicates a significant difference, with international students reporting higher levels of loneliness even after controlling for their overall life satisfaction, gender and variations across host universities ( $B=0.16$ ,  $p<0.001$ ). This outcome aligns with expectations given that international Chinese students, relocating to Germany for academic reasons, often find themselves separated from their families. This separation might contribute to increased feelings of loneliness when compared to their local counterparts. Local students, while also navigating university life transitions, typically remain in closer proximity to their families and friends, more multiple-context relationships, possess familiarity with the German education system, and importantly, are fluent in German language. These factors collectively may mitigate a sense of alienation compared to international Chinese students, who face additional challenges related to adapting to a new country, including linguistic and cultural adjustments. Therefore, our data supports Hypothesis 1.

## Predictors of International Chinese Students' loneliness

In Hypothesis 2 ([H2](#)), we investigated the quantitative aspects of ego's social ties. To test [H2](#), we introduced the variable of network size into our models (Model 2, [Table 3](#)). However, this correlation did not prove significant for international Chinese students. Hence, we did not find support for [H2](#) at this stage of the analysis.

**TABLE 2** Linear regression models with university fixed effects predicting loneliness ( $N=791$ ) (International Chinese and Local Students Compared).

	Model 1	
	<i>B</i>	<i>SE</i>
Constant	1.35***	0.14
Status (ref=local)	0.16***	0.04
Gender (ref= male)	-0.01	0.04
Life satisfaction	-0.21***	0.02
University fixed effects		
Adj. $R^2$	0.15	

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

Our third hypothesis (H3) focused on the association between the quality of personal relationships, specifically emotional support, and loneliness. We expected that a greater number of emotionally supportive ties would be associated with lower levels of loneliness. Surprisingly, our analysis revealed a significant effect of emotional support on loneliness for international Chinese students ( $B=0.03$ ,  $p < 0.05$ ) (Model 3, Table 3). However, this finding contradicts our hypothesis and constitutes a puzzle, as the data indicate that a higher number of emotionally supportive ties is actually correlated with a higher level of loneliness. This counterintuitive correlation may be explained by considering that emotional support entails both receiving and providing support. Engaging in conversations about personal and private matters with alters in the past year, may be perceived as burdensome by ego or reinforce feelings of homesickness and loneliness in the (potential) absence of these individuals. Consequently, we are compelled to reject H3 due to the contradictory effect of emotional support on loneliness. Interestingly, when we include emotional support in Model 3, network size becomes a significant predictor of loneliness for international Chinese students ( $B=-0.03$ ,  $p < 0.05$ ). Specifically, when international Chinese students have an equal number of emotionally supportive ties, those with larger networks experience less loneliness compared to their peers with smaller networks. In other words, the impact of network size on loneliness becomes significant only when the number of emotional supportive ties is held constant. Overall, the findings in Model 3 are twofold: We observe that an increase in emotionally supportive ties is associated with heightened feelings of loneliness, and we also observe that an increase in network size reduces loneliness for international Chinese students when holding emotional support constant.

Hypothesis 4 (H4) focuses on the transnational nature of the ego's social network. We hypothesized that the number of alters residing in Germany does not affect international Chinese students' sense of loneliness, as both transnational and local ties can act as buffers against loneliness. As expected, the location of alters did not show a statistically significant impact (Model 4, Table 3). These findings suggest that the transnational practices may effectively mitigate feelings of loneliness. Geographical separation does not necessarily lead to emotional or social detachment. Thus, these findings support H4.

In Hypothesis 5 (H5), we stated that being in a relationship reduces experiences of loneliness among international Chinese (Model 5, Table 3). We predicted that students in a relationship would experience lower levels of loneliness compared to those who are not, as they have at least one very close, intimate tie. Including students' relationship status in our model revealed a strong and highly significant correlation between relationship status and loneliness ( $B=-0.25$ ,  $p < 0.001$ ). Students in a relationship are less lonely than singles. A close, intimate tie such as a romantic partner seems to act as a buffer against loneliness, making it an important resource for young adults and international students in the university settings. Our findings align with the expectations of H5.

**TABLE 3** Linear regression models with university fixed effects predicting loneliness (N=455) (International Chinese Students).

	Model 2		Model 3		Model 4		Model 5	
	B	SE	B	SE	B	SE	B	SE
Constant	2.31***	0.22	2.30***	0.22	2.31***	0.22	2.44***	0.22
Network size	−0.02	0.01	−0.03*	0.01	−0.03*	0.01	−0.03*	0.01
Emotional support			0.03*	0.01	0.03*	0.01	0.03*	0.01
Alters living in Germany					−0.02	0.01	−0.01	0.01
Romantic relationship (ref=no)							−0.25***	0.05
Country where partner lives (ref=Germany)								
Another country								
Not in a relationship								
Diff. making cross-national friendships (ref=never)								
Seldom								
Sometimes								
Often								
Always								
Seldom								
Sometimes								
Often								
Always								
Gender (ref=male)	−0.08	0.06	−0.09	0.06	−0.08	0.06	−0.09	0.05
Life satisfaction	−0.28***	0.03	−0.28***	0.03	−0.28***	0.03	−0.28***	0.03
University fixed effects								
Adj. R <sup>2</sup>	0.16		0.17		0.17		0.22	
			Model 6			Model 7		
			B	SE		B	SE	
Constant			2.06***	0.21		1.84***	0.23	
Network size			−0.03*	0.01		−0.03*	0.01	
Emotional support			0.03**	0.01		0.03**	0.01	
Alters living in Germany			0.00	0.01		0.00	0.01	
Relationship status (ref=no)								
Country where partner lives (ref=Germany)								
Another country			0.28***	0.07		0.27***	0.07	
Not in a relationship			0.35***	0.05		0.34***	0.05	
Diff. making cross-national friendships (ref=never)								
Seldom						0.09	0.07	
Sometimes						0.12	0.07	
Often						0.26***	0.07	
Always						0.29*	0.12	

(Continues)

TABLE 3 (Continued)

	Model 6		Model 7	
	B	SE	B	SE
Seldom				
Sometimes				
Often				
Always				
Gender (ref = male)	−0.08	0.05	−0.07	0.05
Life Satisfaction	−0.28***	0.03	−0.26***	0.03
University fixed effects				
Adj. R <sup>2</sup>	0.24		0.26	

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

Hypothesis 6 (H6) shifts the focus back to transnationality, specifically concerning romantic partnerships. Our hypothesis posits that having a partner in Germany is associated with decreased loneliness. Model 6 reveals that students with a partner outside Germany exhibit significantly higher levels of loneliness compared to those with a partner in Germany ( $B = 0.28$ ,  $p < 0.001$ ). This effect is even more pronounced when contrasting students with a partner in Germany to those who are single ( $B = 0.35$ ,  $p < 0.001$ ). Contrary to the findings in H4, where a transnational network did not correlate with increased loneliness, this is not the case for transnational romantic relationships. The presence of a single, close and intimate tie at a geographical distance is correlated with heightened loneliness. This may be attributed to the more physical nature of romantic relationships compared to friendships, leading to increased sentiments of homesickness and a profound sense of missing the distant partner. Importantly, these findings align with the expectations outlined in H6.

Furthermore, we examine the impact of difficulties in forming new cross-national friendships on international students' feelings of loneliness in Hypothesis 7 (H7). We conducted an additional regression model (Model 7, Table 3), including all previously mentioned control and network variables, as well as the independent variable representing difficulties with making cross-national friendships (Model 7). Our seventh hypothesis (H7) posited that international Chinese students who face difficulties in making cross-national friendships would experience higher levels of loneliness. Supporting this hypothesis, our data reveal that encountering this difficulty often ( $B = 0.26$ ,  $p < 0.001$ ) or always ( $B = 0.29$ ,  $p < 0.05$ ) significantly increases the level of loneliness compared to never encountering it. This finding highlights the importance of friendships in alleviating loneliness as they represent potential multiple-context relationships. These bonds enable individuals to perceive others from various perspectives and in different roles and settings, thereby alleviating feelings of loneliness (Donbavand, 2020).

## Contrasting international Chinese and local Students' loneliness

To understand loneliness experienced by international Chinese students, we compare predictors between them and local students. In our analysis (Model 8–11, Table 4), we found that network size and emotional support did not significantly influence loneliness among local students, in contrast to their international counterparts. This lack of significance also extends to the geographic distribution of social connections, which is expectable given that most of these connections are within Germany for local students. In contrast, the presence or absence of a romantic partner emerged as a pivotal factor for local students, even more so than for international Chinese

**TABLE 4** Linear regression models with university fixed effects predicting loneliness ( $N=336$ ) (Local Students).

	Model 8		Model 9		Model 10		Model 11	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Constant	0.80***	0.20	0.80***	0.20	0.81***	0.20	0.92***	0.19
Network size	−0.00	0.01	−0.01	0.02	−0.00	0.03	−0.02	0.03
Emotional support			0.01	0.02	0.01	0.02	0.01	0.02
Alters living in Germany					−0.01	0.02	0.01	0.02
Relationship status (ref=no)							−0.33***	0.05
Gender (ref= male)	0.10	0.06	0.10	0.06	0.09	0.06	0.15*	0.06
Life satisfaction	−0.17***	0.03	−0.17***	0.03	−0.17***	0.03	−0.16***	0.03
University fixed effects								
Adj. $R^2$	0.13		0.13		0.13		0.22	

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

students, significantly reducing loneliness ( $B = -0.33$ ,  $p < 0.001$ ). These findings suggest that while intimate relationships are paramount for local students in combating loneliness, various interpersonal connections contribute to the experience of loneliness for international Chinese students. However, it is worth noting that being in a romantic relationship remains the most influential factor for both groups.

## DISCUSSION AND CONCLUSION

Expanding on Simmel's insights, we argue that loneliness is not solely a subjective experience at the individual level but is deeply intertwined with social structures and relationships. Through empirical evidence demonstrating correlations between loneliness and parameters such as network size, number of alters, and relationship status, in this paper we illustrate that loneliness is constituted by the dynamics of social networks. This perspective emphasizes that loneliness is not merely an individual problem but is rooted in the broader context of social organization and interaction patterns. By acknowledging the role of social structures in shaping feelings of loneliness, we can develop more tailored programs for international students that address underlying structural factors contributing to social isolation and loneliness. After all, understanding and addressing the factors contributing to loneliness among international students not only promotes their well-being and academic success but also contributes to student diversity on campuses.

In alignment with our initial hypothesis (H1), our study revealed higher levels of loneliness among international students compared to their local counterparts, consistent with Simmel's notion that loneliness can stem from limitations in social structures and personal interactions. Contrary to our second hypothesis (H2) proposing a negative correlation between network size and loneliness, our findings did not support this relationship, suggesting that the mere quantity of social connections may not necessarily alleviate loneliness as suggested by Simmel's emphasis on the importance of diverse and meaningful interactions. Investigating our third hypothesis (H3) concerning the association between emotional support within social relationships and loneliness levels, we observed a nuanced pattern among international Chinese students. Contrary to our expectations, an increase in emotionally supportive ties in personal networks was associated with higher levels of loneliness among these students – at least when their networks were otherwise of equal size. However, this effect was not observed among local



students, indicating the complexity of social dynamics and their impact on loneliness across different cultural contexts.

Contrary to our expectations, our examination of emotional support (H3) yielded unexpected and somewhat contradictory findings. While we had anticipated that a greater number of emotionally supportive ties would correspond with reduced loneliness levels, our analysis revealed a weak yet significant positive association, particularly notable among international Chinese students. These findings are highly remarkable and to some extent counterintuitive. Several factors may contribute to this puzzle. First, the manner in which emotional support was measured could have influenced our results. Although respondents were asked about discussing personal matters with their self-nominated personal ties, this interaction might have been perceived as a reciprocal exchange, where individuals both provide and receive emotional support. Consequently, if respondents perceive themselves as primary confidants for their personal ties, bearing the emotional burden of supporting others could potentially contribute to heightened feelings of loneliness. Second, the cross-sectional nature of our data introduces the possibility of reverse causality. It is plausible that individuals experiencing loneliness seek out more discussions about personal matters, while those who do not feel lonely engage in fewer such conversations. Further investigation utilizing longitudinal data would be beneficial in clarifying this relationship. Third, this finding carries implications for both emotional support and the strength and multiplexity of social ties. Traditionally, emotional support has been associated with strong ties – individuals with whom one shares frequent reciprocal relationships (Fischer, 1982; Wellman, 1979). However, recent discussions on emotional support suggest that weak ties, those with sporadic interactions, may also provide valuable support by being available at the right time and place for individuals to confide in (Small, 2017). Future studies should explore the multiple-context relationships of emotionally supportive ties, including whether they engage in activities such as socializing, studying, or cooking together, and whether they provide support in other domains such as financial or informational assistance. Utilizing network analysis with multiple questions of support can shed light on these relationships and contribute to a deeper understanding of loneliness from a Simmelian's perspective.

Examining the influence of the location of network members on loneliness levels among international Chinese students, we find support for our fourth hypothesis (H4). This hypothesis posits that the location of network members, whether local or transnational, does not significantly affect students' feelings of loneliness. In line with previous studies (Beech, 2015; Bilecen, 2014; Sawir et al., 2008), we argue that both local and transnational ties serve distinct functions, with local connections offering practical support and a sense of community in a novel environment, while transnational relationships provide remote emotional support through internet and telecommunication technologies.

Our analysis confirms a robust and notably significant correlation between relationship status and loneliness, aligning with our hypothesis (H5). Particularly among international students, having a romantic partner serves as a protective factor against loneliness, especially when the partner resides in the same country of education. While it is not surprising that being in a romantic relationship can alleviate loneliness, it is noteworthy that this buffering effect is notably amplified when the partner resides in Germany. Spatial proximity emerges as a significant factor in romantic relationships, exerting a positive influence on the reduction of loneliness. This finding not only supports our hypothesis (H6) but also underscores the importance of spatial proximity in fostering deep interpersonal connections and well-being echoing Simmel's notion of multiple-context relationships.

Finally, we explored the impact of challenges in establishing cross-national friendships on the experiences of loneliness among international Chinese students (H7). Our findings reveal that students encountering difficulties in forming new friendships with individuals from other countries tend to experience heightened levels of loneliness. This struggle in cultivating cross-national friendships resonates with the experiences of international students across various country contexts, as indicated by previous research (e.g. Beech, 2015; Hendrickson et al., 2011; Yan & Berliner, 2013; Zhang & Brunton, 2007). Consequently, while our study sheds light on loneliness among international Chinese students in Germany, further research in this domain is needed to gain a nuanced

understanding of the factors contributing to loneliness among all international students, particularly through the lens of structural loneliness.

An important limitation of our study pertains to the timing of the network survey, which was administered separately from the main survey, potentially resulting in inconsistencies in respondents' understanding of the item measurements. Nonetheless, despite this constraint, our study represents a pioneering endeavour in integrating research on international student mobility, network dynamics, and loneliness. Our findings regarding the challenges experienced by international students highlight the necessity for further research encompassing diverse student populations. Such investigations will enable the development of targeted recommendations aimed at enhancing the study abroad experience for all international students in Germany. By elucidating the predictors of loneliness among international Chinese students, our study lays the groundwork for future research endeavours and the formulation of interventions geared towards bolstering the overall well-being and satisfaction of international students. For future research, it would be interesting to explore how COVID-19 might have amplified already existing high levels of loneliness among international students. Given the multifaceted nature of loneliness, we advocate for a multidisciplinary approach and the utilization of diverse research methods in future studies. This inclusive approach is indispensable for comprehensively identifying the mechanisms underlying loneliness and understanding the complex interplay among these mechanisms in shaping the experiences of international students.

## ACKNOWLEDGEMENTS

We are grateful for the project funding we received from DFG, The German Research Foundation, which made it possible to collect this novel data set. We would also like to thank Mark Huisman and Katja Moehring for their comments mainly on the methods and analysis sections. We would also like to thank Verena Seibel for her comments on the earlier drafts, as well as the participants and panellists of the Migration and Social Change conference in June 2023, organized by Verena Seibel and Meta van Linden for their valuable feedback. Open Access funding enabled and organized by Projekt DEAL.

## CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in the UK Data Service at <https://reshare.ukdataservice.ac.uk/854291/>.

## PEER REVIEW

The peer review history for this article is available at <https://www.webofscience.com/api/gateway/wos/peer-review/10.1111/imig.13298>.

## ORCID

Başak Bilecen  <https://orcid.org/0000-0002-8545-9739>

Thomas Faist  <https://orcid.org/0000-0003-3887-0135>

## ENDNOTE

<sup>i</sup>Local students comprise the majority population in the countries of education. While international or foreign students are primarily identified based on their citizenship and visa status, the category of local students might include individuals from second-generation migration groups. In the context of Germany, the terminology encompasses three main categories: international or foreign students based on their citizenship and study visa (Bildungsausländer\*innen); foreign students who have completed their high school education in Germany, including second-generation migrants who are

not German citizens (Bildungsinländer\*innen); and local German students. In this study, we consider local students to include both 'native-born Germans' and second-generation migrants or Germans with a migration background who have obtained their high school degree in the country.

## REFERENCES

- Beck, U. & Beck-Gernsheim, E. (1995) *The Normal chaos of love*. Cambridge: Polity Press.
- Beech, S.E. (2015) International student mobility: the role of social networks. *Social & Cultural Geography*, 16(3), 332–350.
- Beech, S.E. (2019) *The geographies of international student mobility: spaces, places and decision-making*. Basingstoke: Palgrave MacMillan.
- Bilecen, B. (2014) *International student mobility and transnational friendships*. Basingstoke: Palgrave Macmillan.
- Bilecen, B. (2024) Linguistic capital and social inequalities: experiences of international Chinese students in Germany. *Population, Space and Place*, 30, e2725. Available from: <https://doi.org/10.1002/psp.2725>
- Bilecen, B., Diekmann, I. & Faist, T. (2023) Loneliness among Chinese international and local students in Germany: the role of student status, gender, and emotional support. *European Journal of Higher Education*, 1–19. Available from: <https://doi.org/10.1080/21568235.2023.2215992>
- Brooks, R. & Waters, J. (2010) Social networks and educational mobility: the experiences of UK students. *Globalisation, Societies and Education*, 8(1), 143–157.
- Brooks, R. & Waters, J. (2011) *Student mobilities, migration and the internationalization of higher education*. New York, NY: Palgrave.
- Bucher, A., Neubauer, A.B., Voss, A. & Oetzbach, C. (2019) Together is better: higher committed relationships increase life satisfaction and reduce loneliness. *Journal of Happiness Studies*, 20, 2445–2469.
- Cacioppo, J.T. & Patrick, W. (2008) *Loneliness: human nature and the need for social connection*. New York, NY: W.W. Norton.
- De Jong, G.J. & Van Tilburg, T. (2006) A 6-item scale for overall, emotional, and social loneliness: confirmatory tests on survey data. *Research on Aging*, 28(5), 582–598. Available from: <https://doi.org/10.1177/0164027506289723>
- Deniz, M.E., Hamarta, E. & Ari, R. (2005) An investigation of social skills and loneliness levels of university students with respect to their attachment styles in a sample of Turkish students. *Social Behavior and Personality*, 33, 19–32.
- Diehl, K., Jansen, C., Ishchanova, K. & Hilger-Kolb, J. (2018) Loneliness at universities: determinants of emotional and social loneliness among students. *International Journal of Environmental Research and Public Health*, 15(9), 1865.
- Donbavand, S. (2020) A Simmelian theory of structural loneliness. *Journal for the Theory of Social Behaviour*, 51, 72–86.
- Dykstra, P.A. & Fokkema, T. (2007) Social and emotional loneliness among divorced and married men and women: comparing the deficit and cognitive perspectives. *Basic and Applied Social Psychology*, 29, 1–12. Available from: <https://doi.org/10.1080/01973530701330843>
- Faist, T. (2000) *The volume and dynamics of international migration and transnational social spaces*. Oxford: Oxford University Press.
- Faist, T. & Bilecen, B. (2019) Transnationalism. In: Gold, S.J. & Nawyn, S.J. (Eds.) *Routledge international handbook of migration studies*. New York, NY: Routledge, pp. 499–511.
- Findlay, A.M., King, R., Smith, F.M., Geddes, A. & Skeldon, R. (2011) World class? An investigation of globalization, difference and international student mobility. *Royal Geographical Society*, 37(1), 118–131.
- Fischer, C.S. (1982) *To dwell among friends: personal networks in town and city*. Chicago, IL: University of Chicago Press.
- Green, L.R., Richardson, D.S., Lago, T. & Schatten-Jones, E.C. (2001) Network correlates of social and emotional loneliness in young and older adults. *Personality and Social Psychology Bulletin*, 27, 281–288.
- Guruz, K. (2011) *Higher education and international student mobility in the global knowledge economy*. Albany, NY: State University of New York Press.
- Hawkey, L.C., Browne, M.W. & Cacioppo, J.T. (2005) How can I connect with thee? Let me count the ways. *Psychological Science*, 16(10), 798–804.
- Hawkey, L.C. & Cacioppo, J.T. (2010) Loneliness matters: a theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*, 40(2), 218–227.
- Hechanova-Alampay, R., Beehr, T.A., Christiansen, N.D. & Van Horn, R.K. (2002) Adjustment and strain among domestic and international student sojourners: a longitudinal study. *School Psychology International*, 23(4), 458–474. Available from: <https://doi.org/10.1177/0143034302234007>
- Hendrickson, B., Rosen, D. & Aune, R.K. (2011) An analysis of friendship networks, social connectedness, homesickness, and satisfaction levels of international students. *International Journal of Intercultural Relations*, 35(3), 281–295.

- Jiang, L. & Kosar Altinyelken, H. (2020) The pedagogy of studying abroad: a case study of Chinese students in The Netherlands. *European Journal of Higher Education*, 10(2), 202–216.
- Kemppainen, L., Kemppainen, T., Fokkema, T., Wrede, S. & Kouvonen, A. (2023) Neighbourhood ethnic density, local language skills, and loneliness among older migrants—a population-based study on Russian speakers in Finland. *International Journal of Environmental Research and Public Health*, 20(2), 1117.
- Lee, J.J. & Rice, C. (2007) Welcome to America? International student perceptions of discrimination. *Higher Education*, 53, 381–409.
- Lehto, X.Y., Cai, L.A., Fu, X. & Chen, Y. (2014) Intercultural interactions outside the classroom: narratives on a US campus. *Journal of College Student Development*, 55(8), 837–853.
- Lin, Y. & Kingminghae, W. (2014) Social support and loneliness of Chinese international students in Thailand. *Journal of Population and Social Studies*, 22(2), 141–157.
- Marginson, S., Nyland, C., Sawir, E. & Forbes-Mewett, H. (2010) *International student security*. Cambridge: Cambridge University Press.
- Marquez, J., Goodfellow, C., Hardoon, D., Inchley, J., Leyland, A.H., Qualter, P. et al. (2023) Loneliness in young people: a multilevel exploration of social ecological influences and geographic variation. *Journal of Public Health*, 45(1), 109–117.
- Mazzarol, T. & Soutar, G.N. (2001) *The global market for higher education: sustainable competitive strategies for the new millennium*. Cheltenham: Edward Elgar.
- Michalska da Rocha, B., Rhodes, S., Vasilopoulou, E. & Hutton, P. (2018) Loneliness in psychosis: A meta-analytical review. *Schizophrenia Bulletin*, 44(1), 114–125. Available from: <https://doi.org/10.1093/schbul/sbx036>
- Möhring, K. (2012) *The fixed effect as an alternative to multilevel analysis for cross-National Analyses*. Cologne: Graduate School in Management, Economics and Social Sciences, University of Cologne.
- Mund, M., Maes, M., Drewke, P.M., Gutzeit, A., Jaki, I. & Qualter, P. (2023) Would the real loneliness please stand up? The validity of loneliness scores and the reliability of single-item scores. *Assessment*, 30(4), 1226–1248.
- Pekerti, A.A., van de Vijver, F.J.R., Moeller, M. & Okimoto, T.G. (2020) Intercultural contacts and acculturation resources among international students in Australia: a mixed-methods study. *International Journal of Intercultural Relations*, 75, 56–81. Available from: <https://doi.org/10.1016/j.ijintrel.2019.12.004>
- Peplau, L.A. & Perlman, D. (1982) Perspectives on loneliness. In: Peplau, L.A. & Perlman, D. (Eds.) *Loneliness: a sourcebook of current theory, research and therapy*. New York, NY: Wiley, pp. 1–20.
- Ponzetti, J.J., Jr. (1990) Loneliness among college students. *Family Relations*, 39, 336–340.
- Poyrazli, S. & Lopez, M.D. (2007) An exploratory study of perceived discrimination and homesickness: a comparison of international students and American students. *The Journal of Psychology*, 141(3), 263–280.
- Robinson, O., Somerville, K. & Walsworth, S. (2024) Building, negotiating and sustaining transnational social networks: narratives of international students' migration decisions in Canada. *Global Networks*, 24, e12442. Available from: <https://doi.org/10.1111/glob.12442>
- Sawir, E., Marginson, S., Deumert, A., Nyland, C. & Ramia, G. (2008) Loneliness and international students: an Australian study. *Journal of Studies in International Education*, 12(2), 148–180.
- Shields, R. (2013) Globalization and international student mobility: a network analysis. *Comparative Education Review*, 57(4), 609–636.
- Simmel, G. (1950) *The sociology of Georg Simmel*. New York, NY: Free Press.
- Small, M.L. (2017) *Someone to talk to*. Cambridge: Cambridge University Press.
- Spencer-Oatey, H., Dauber, D., Jing, J. & Wang, L. (2017) Chinese students' social integration into the university community: hearing the students' voices. *Higher Education*, 74, 739–756. Available from: <https://doi.org/10.1007/s10734-016-0074-0>
- Taylor, S.E. (2011) Social support: a review. In: Friedman, M.S. (Ed.) *The handbook of health psychology*. New York, NY: Oxford University Press, pp. 189–214.
- Teichler, U. (2017) Internationalisation trends in higher education and the changing role of international student mobility. *Journal of International Mobility*, 5(1), 177–216.
- Tsai, W., Wang, K.T. & Wei, M. (2017) Reciprocal relations between social self-efficacy and loneliness among Chinese international students. *Asian American Journal of Psychology*, 8(2), 94–102. Available from: <https://doi.org/10.1037/aap0000065>
- UNESCO. (2019) *Outbound internationally Mobile students by host region*. Geneva: UNESCO. Available from: <http://data.uis.unesco.org/Index.aspx?queryid=172> [Accessed 14th June 2020].
- Walsworth, S., Somerville, K. & Robinson, O. (2021) The importance of weak friendships for international student satisfaction: empirical evidence from Canada. *International Journal of Intercultural Relations*, 80, 134–146. Available from: <https://doi.org/10.1016/j.ijintrel.2020.11.004>
- Ward, C., Bochner, S. & Furnham, A. (2001) *The psychology of culture shock*. East Sussex: Routledge.

- Ward, C. & Rana-Deuba, A. (2000) Home and host culture influences on sojourner adjustment. *International Journal of Intercultural Relations*, 24, 291–306.
- Weiss, R.S. (1973) *Loneliness: the experience of emotional and social isolation*. Cambridge, MA: MIT Press.
- Weiss, R.S. (1974) The provisions of social relationships. In: Zick, R. (Ed.) *Doing unto others: joining, molding, conforming, helping, loving*. Englewood Cliffs, NJ: Prentice Hall, pp. 17–26.
- Wellman, B. (1979) The community question: the intimate networks of east Yorkers. *American Journal of Sociology*, 84(5), 1201–1231.
- Williams, C.T. & Johnson, L.R. (2011) Why can't we be friends? Multicultural attitudes and friendships with international students. *International Journal of Intercultural Relations*, 35(1), 41–48.
- Wissenschaft Weltoffen. (2022) *Facts and figures on the International Nature of Studies and Research in Germany and Worldwide*. Available from: [https://www.wissenschaft-weltoffen.de/content/uploads/2022/11/wiwe\\_2022\\_web\\_en.pdf](https://www.wissenschaft-weltoffen.de/content/uploads/2022/11/wiwe_2022_web_en.pdf) [Accessed 13th July 2023].
- Yan, K. & Berliner, D.C. (2011) Chinese international students in the United States: demographic trends, motivations, acculturation features and adjustment challenges. *Asia Pacific Education Review*, 12(2), 173–184.
- Yan, K. & Berliner, D.C. (2013) Chinese international Students' personal and sociocultural stressors in the United States. *Journal of College Student Development*, 54(1), 62–84.
- Yan, K. & Berliner, D.C. (2016) The unique features of Chinese international students in the United States. In: Guo, S. & Guo, Y. (Eds.) *Spotlight on China: Chinese education in the globalized world, spotlight on China*. Rotterdam: SensePublishers, pp. 129–150.
- Yeh, C. & Inose, M. (2003) International students' reported English fluency, social support satisfaction, and social connectedness as predictors of acculturative stress. *Counseling Psychology Quarterly*, 16, 15–28.
- Zhang, Z. & Brunton, M. (2007) Differences in living and learning: Chinese international students in New Zealand. *Journal of Studies in International Education*, 11(2), 124–140.

**How to cite this article:** Bilecen, B., Diekmann, I. & Faist, T. (2025) The puzzle of loneliness: A sociostructural and transnational analysis of International Chinese Students' networks in Germany. *International Migration*, 63, e13298. Available from: <https://doi.org/10.1111/imig.13298>