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ORIGINAL ARTICLE

# A Systematic Review on the Factors Affecting Chinese International Students' Mental Health

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## Abstract

Psychological stress among college students is significantly higher than that among the general population, and the COVID-19 pandemic has impacted the mental health of many college students. However, relatively little research has focused on Chinese international students' (CISs) mental health in the USA. The purpose of this study is to identify factors that may affect Chinese international students' mental health through a systematic review of the literature. We reviewed refereed empirical research articles published during 2010–2021 and explored the factors identified in these articles that affect the mental health status of CISs who are attending US universities. A total of 49 articles (31 quantitative, 15 qualitative, and 3 mixed-methods) that met the inclusion criteria were reviewed and analyzed. Through this review, we identified three main categories of factors: personal, environmental, and behavioral. We further examined specific factors under each category. Results demonstrate 104 personal factors, 68 environmental factors, and 18 behavioral factors that affect CISs' mental health status. Findings suggest that many factors may trigger CISs' mental health, but little was known about causal factors, which point to future research on intervention studies to identify causal relationships between variables. Practical implications are discussed.

**Keywords** Chinese international students · Mental health · COVID pandemic

The USA has been hosting the largest share of international students globally, with the largest group from Mainland China (Institute of International Education, 2021). Even though the number of students decreased by 14.8% compared with the previous year, China remained the leading place of origin of international students in the USA. Based on the Open Doors Report, there were 317,299 Chinese international students (CISs) at US higher education institutions in the 2020/21 academic

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year (Institute of International Education, 2021). This accounted for 35% of all international students in the USA, which was 17% more than the second leading country, India (Institute of International Education, 2021). This was the first decrease in 18 years since the 2003/04 school year and coincides with the year that SARS became an epidemic (Institute of International Education, 2021). The dynamic relationship between the USA and China changes in attitude toward studying abroad, and the COVID-19 pandemic might be some of the reasons for this decrease.

Although researchers conducted studies related to international students' academic successes (e.g., Martirosyan et al., 2019; Van Horne et al., 2018), there is relatively little research on international students' mental health, particularly CISs. The COVID-19 pandemic started in 2020 has had a huge impact on higher education and triggered more studies to pay attention to international students, especially CISs. Studies documented unsupportive policies (e.g., tightened entry requirements and specified credit hours), the biased environment in the host country, and prejudiced perspectives that accused CISs of being contagious (Zhai & Du, 2020). The COVID-19 pandemic sparked a stronger call for research on CISs' mental health status (Zhai & Du, 2020). This systematic review will respond to that call with the purpose of exploring the factors that may affect the mental health status of CISs who are attending US universities. Chinese students with immigrant visas (i.e., permanent residence) can access as many resources as American citizens, and they usually come to the USA with families. Thus, this study focuses on non-immigrant CISs who hold non-immigrant visas (e.g., F1, J1), since their experiences and mental health implications are significantly different from those holding immigrant visas. More specifically, this study aims to answer the research question: what are the factors that can affect the mental health status of CISs who are studying at US universities? The "factors" refer to any influences, such as risk, protective, or predictive factors, including interventions, personalities, environment, or social support, which may impact CISs' mental health.

## Mental Health and College Student Success

Due to cultural adjustments and transitions, international students have unique support needs which place them at greater risk for various psychological problems (Mori, 2000). Those psychological problems may decrease students' general well-being and life satisfaction, influence their academic performance, and even result in health risk behavior or problematic coping strategies such as alcohol use or smoking (Kim & Cronley, 2020). In addition, the Chinese education system emphasizes effort and high achievement and shows less forgiveness toward underachievement (Turner et al., 2021). For example, Chinese students are used to academic competition at an early age, and they internalize these cultural values, which may affect their behavior or interactions in class and their responses to academic stressors (Cao et al., 2021; Turner et al., 2021). Therefore, CISs tend to experience more academic stress than their counterparts.

Lian and Wallace (2020) conducted a mental health survey among CISs, suggesting that 77.9% and 74.3% of participants stated having experienced depression and

anxiety symptoms in the past year, respectively. Studies showed that CISs studying in the USA have high levels of mental health challenges (e.g., Han et al., 2013; Lian & Wallace, 2020). Moreover, college students' mental health status is associated with their academic success (Eisenberg et al., 2009). Thus, it is necessary to understand CISs' psychological status and what affects their mental health to promote their development and success in college, which guides this review on student mental health.

## Conceptual Framework

Critical race theory (CRT) and social cognitive theory (SCT) were applied to guide this study. Critical race theory is race-based and used in research against white privilege, to emphasize racial justice, advocate for African Americans, and study the intersectional relationship among race, racism, and power (Delgado & Stefancic, 2017). In the educational field, CRT was applied by scholars to study racial stratification, educational inequality, and so forth (Teranishi et al., 2009). Researchers provided evidence that CRT not only works well with African Americans but also can be applied to studies that include other race groups, such as Asian Americans and Pacific Islanders (Teranishi et al., 2009; Villenas & Deyhle, 1999). Yao et al. (2019) argued that CRT is an applicable framework for the research of international students because their experiences in the USA are rife with othering, power inequities, and racialization. Thus, this study uses CRT as the conceptual framework since one of the key elements of this study is Chinese international students, who identified as both Chinese and international students. When reviewing the articles, the lens of CRT can guide this research focus on studies involving CISs. CRT also enables a better understanding of factors such as race, identity, or discrimination that impact CISs. This explains how the intersection of these different types of factors affects students' mental health.

The SCT was applied because its components can help this literature review identify the articles and finalize items of the matrix. According to Corey (2017), "social cognitive theory involves a triadic reciprocal interaction among the environment, personal factors, and individual behavior" (p. 235). Therefore, SCT as an integral component of the conceptual framework not only guides this review to categorize the three types of factors but also identifies interactive relationships between and among these factors. First, this study categorized factors that affect CISs' mental health into three types: environmental, personal, and behavioral. Personal factors referred to personal traits, attitudes, or characteristics that influence students' mental health. Environmental components represented factors that cannot be fully controlled or determined by students themselves such as surrounding situations or interaction with others. Individuals' behaviors that influence their well-being were defined as behavioral factors. With the lens of SCT, this study targets different types of factors more precisely during the scanning and searching process. Furthermore, the influence of the intersection among these factors was identified. Additionally, CRT helped with identifying race-related factors, and it enabled this review to keep tracking factors such as discrimination and racism.

## Method

### *Search Strategy*

This review involved five electronic databases: PsycINFO (American Psychological Association), ERIC (Education Resources Information Center), EBSCO (Academic Search Complete), Web of Science, and OVID Medline. Google Scholar was included for the exploratory purpose. Key terms "Chinese international" and "Mental health" were identified, and synonyms for these key terms were proposed to establish the search query. The keywords of the search query were as follows: "mental health," "wellness," "well being," "well-being," "psychological health," "emotional adjustment," "emotional health," "mental status," "health behavior," "depress*," "anxi*," "emotional symptom*," "china," "chinese," "study abroad," "international," and "oversea*". Asterisk represents any word with that prefixed (e.g., depress* represents depressed and depression). PRISMA (Page et al., 2021) was used to select and review the articles that illustrate the factors that have influenced the mental health of CISs who study in the USA.

The initial search query was tested and revised twice based on the database outcome result of pilot study. The final search query was determined after undergoing two rounds of testing. In each test, the drafted search query was entered into the above five databases. Researchers then scanned the first 100 results to obtain feedback regarding the accuracy of the search query. Additionally, researchers also checked the keywords identified in those 100 articles and considered if any of them were omitted from the drafted search query and could potentially be added to enhance the search.

### Inclusion and Exclusion Criteria

The inclusion criteria were as follows: (a) empirical research articles; (b) published by a peer-reviewed journal through the refereed review process; (c) published in the last 11 years (2010–2021); (d) articles were written in English; (e) participants include CISs studying in US universities with non-immigrant visas. Therefore, we systematically reviewed empirical research articles written in English that were published by a peer-reviewed journal through the referred review process from January 1st, 2010, to December 31st, 2021. Exclusion criteria for this study were as follows: (a) not empirical in nature; (b) not peer-reviewed articles; (c) written in languages rather than English.

### Screening

The screening process and outcomes were presented in Fig. 1. In the first round of screening, three reviewers read the title and abstract of the articles by following the inclusion and exclusion criteria. A total of 2913 results were yielded in the initial search. After removing 464 duplicate items, 2499 articles were left. Among

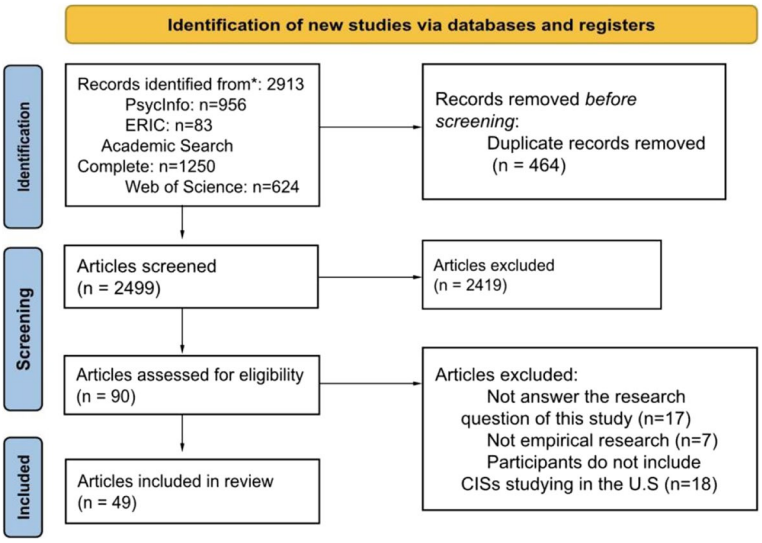


**Fig. 1** Study scanning and selection progress. Adapted from: Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., … & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. International Journal of Surgery, 88, 105,906. https://doi.org/10.1136/bmj.n71

the 2499 results, 47 were "likely included" labeled and 43 were "maybe" labeled which need a deeper analysis to determine if they meet the inclusion criteria. Then, an additional 2409 were excluded. The consistent proportion between two reviewers and the primary reviewer was calculated. A total of 701 articles were scanned for the interrater reliability. Articles with conflict labels between the primary reviewer and two reviewers were identified. Reviewers remained consistent in their decision across 667 articles on whether they should be included in this study. Thus, the screening inter-observer agreement is 95.15%. In the second round of screening, two reviewers read the full text of the 90 articles that were labeled as "likely included" and "maybe" in the first stage. Forty-nine articles were selected to be included after the full review.

One of the reviewers is a current Chinese international doctoral student, the other is a Chinese-American professor. Both reviewers, who are the authors of this study, have experience studying in the USA as CISs. They are aware of their connection with this population and understand their role as researchers is to subjectively evaluate and screen data based on predetermined criteria. Therefore, during the screening process, they focus on the inclusion and exclusion criteria. However, at the same time, they are mindful of their prior experiences as well as possible bias and negative impacts on article selection brought by these experiences. To minimize reviewers' bias and enhance the level of trustworthiness, reviewers met on a weekly basis during the data analysis phase. Reviewers needed to update their screening progress, compare their labels and codes, and discuss or reflect on their findings in the weekly meeting. To further enhance the trustworthiness of this study, this research has one

expert as an additional reviewer who has different life experiences and cultural backgrounds to look at the same information.

### Coding

The initial coding table includes author(s), publication year, article title, findings, and links to the articles. The findings column illustrates the conclusion of the selected article that answered this study's research question. After the second round of screen, the matrix method was conducted to organize and compare the selected articles, and enable the researchers to identify differences and similarities among those articles. The initial matrix includes author and published year; title; participants; research designs and analysis; factors; and findings. The "participants" column reports the number of participants when their identities are CISs, if some of their identities are not CISs, the percentage of each identity was reported. In the revised matrix shown in Table 1, the "title" and "findings" columns were omitted, and three types of factors columns (i.e., personal, environmental, and behavioral) were added.

## Results

A total of 49 articles were included in the final review and analysis. The number of selected articles contained in each publishing year was shown in Fig. 2. Noticeably, 15 selected articles were published in 2021, far more than in other years. This finding illustrates a significant increase in the number of publications focusing on CISs' mental health after 2020.

Table 1 includes factors that affect CISs' mental health. There were 31 quantitative studies, 15 qualitative studies, and three mixed-method studies selected. The most frequently used quantitative data analysis method that is used for inferential statistics is regression ($n=21$). Other statistical data analysis methods utilized in these selected articles include ANOVA, Structural Equation Modeling, or moderation models. All of the 15 qualitative studies collect data by interviewing, some of which were combined with questionnaires, observation, and document analysis. All three selected mixed-methods studies conducted interviews to collect qualitative data and used surveys and questionnaires to gather quantitative data.

Forty studies (82%) included CISs only as participants studying in the USA. The remaining studies included some participants who are not identified as CISs studying in the USA. Their identities included international students from other countries, Chinese immigrants, and CISs studied in other countries. Compared with a relatively small sample size of qualitative studies that range from 1 to 24, quantitative studies reviewed by this study had a larger sample size with a range from 8 to 1045. For the mixed-methods studies, the number of participants in the qualitative and quantitative parts was 6–51 and 6–196, respectively.

Factors indicated in the selected articles were categorized into three types: personal, environmental, and behavioral with the lens of social cognitive theory (Corey,

**Table 1** Summary of selected articles and factors indicated

| No | Author/year | Participants | Research designs; analysis | Factors | *P* | *E* | *B* |
|---|---|---|---|---|---|---|---|
| 1 | Xu et al. (2021) | CIS: $N=14$ | Qualitative<br>Descriptive phenomenological psychological method | Safety concerns | | ✓ | |
| | | | | English ability | ✓ | | |
| | | | | Intersectionality of policies and complex decision making | | ✓ | |
| | | | | Unexpected support and benefits | | ✓ | |
| 2 | Sun et al. (2021) | CIS: $N=210$ | Quantitative<br>SEM<br>Multiple moderation model | Perceived discrimination | | ✓ | |
| | | | | Social connectedness with Chinese students | | ✓ | |
| | | | | Social connectedness with American students | | ✓ | |
| | | | | Perceived discrimination x Connectedness with American students | | ✓ | |
| 3 | Ma (2021) | $N=55$<br>Students from China, 58.2%; India, 41.8% | Quantitative<br>Regression and general linear mixed model<br>General linear mixed model | Acculturation stress | ✓ | | |
| | | | | The frequency of communication with host nationals | | ✓ | |
| 4 | Li et al. (2013) | CIS: $N=170$ | Quantitative<br>Multiple regression and ANOVA | Cultural assimilation | ✓ | | |
| | | | | Degree being pursued | ✓ | | |
| 5 | Su et al. (2021) | CIS: $N=751$ | Quantitative<br>Multiple regression | Self-rated English proficiency | ✓ | | |
| | | | | Acculturative stress | ✓ | | |
| 6 | Ma et al. (2021) | CIS: $N=433$ | Quantitative<br>Structural Equation Modeling (SEM) | Face concerns | ✓ | | |
| | | | | Perceived English discrimination | | ✓ | |
| 7 | Song et al. (2021) | CIS: $N=261$ | Quantitative<br>Chi-square, one-way ANOVA, linear regression | Age | ✓ | | |
| | | | | Gender | ✓ | | |
| | | | | Place of residence | | ✓ | |
| | | | | Future academic plan | ✓ | | |
| | | | | Economic pressure | ✓ | | |
| | | | | Health condition | ✓ | | |
| 8 | Xie et al. (2021) | CIS:<br>Quan: $N=196$; Qual: $N=51$ | Mixed-methods<br>Survey and interview | Perceived stereotypes | | ✓ | |

**Table 1** (continued)

| No | Author/year | Participants | Research designs; analysis | Factors | *P* | *E* | *B* |
|---|---|---|---|---|---|---|---|
| 9 | Cheng and Merrick (2017) | CIS: $N=1$ | Qualitative<br>Case study | Dialectical Behavior Therapy with Cultural Adaptation | | ✓ | |
| 10 | Qi et al. (2018) | CIS: $N=243$ | Quantitative<br>Hierarchical multiple regression | Prearrival agency | ✓ | | |
| | | | | Elevation of interpersonal problems | ✓ | | |
| | | | | Psychological distress | ✓ | | |
| 11 | Lian and Wallace (2020) | CIS: $N=222$ | Survey<br>Analytical cross-sectional study<br>Bivariate regression models | Steady relationship | | ✓ | |
| | | | | Grow-up region (rural) | | ✓ | |
| | | | | Likelihood of returning China after graduation | ✓ | | |
| | | | | High level of stress about the returning plan | ✓ | | |
| | | | Open-ended question | Academic stress | ✓ | | |
| | | | | Financial stress | ✓ | | |
| | | | | Job/internship—seeking | ✓ | | |
| | | | | Immigration status stress | ✓ | | |
| | | | | Social adjustment stress | ✓ | | |
| | | | | Discrimination stress | ✓ | | |
| 12 | Lijun (2019) | CIS: $N=8$ | Mixed research;<br>Questionnaire survey and semistructured interview | Content knowledge | ✓ | | |
| | | | | Unpreparedness of cultural difference | ✓ | | |
| | | | | General negative feeling of studying a foreign language | ✓ | | |
| 13 | Wang et al. (2015) | CIS: $N=411$ | Quantitative<br>Multinomial logistic regression | Social connection with mainstream society | | ✓ | |
| | | | | General social connectedness | | ✓ | |
| | | | | Social self-efficacy | ✓ | | |
| | | | | Comfort with disclosing distress | ✓ | | |
| | | | | Self-perceived English proficiency | ✓ | | |

**Table 1** (continued)

| No | Author/year | Participants | Research designs; analysis | Factors | *P* | *E* | *B* |
|---|---|---|---|---|---|---|---|
| 14 | Wang (2016) | CIS: $N=3$ | Qualitative<br>Case study analysis | Dependence on their family | ✓ | | |
| | | | | Confucian middle way | ✓ | | |
| | | | | Mianzi (or "face") | ✓ | | |
| | | | | Filial piety (family obligation) | ✓ | | |
| 15 | Ma and Miller (2021) | $N=182$<br>CIS studying in: USA, 79.1%; Canada, 3.6%; Europe, 12.1%; Middle East, 3.3%; Asia, 1.1%; Australia, 0.6% | Quantitative<br>Multiple linear regression | Perceptions of local and media discrimination | | ✓ | |
| | | | Simple regression | Fear of COVID-19 | ✓ | | |
| | | | One-way ANOVA | Feeling entrapped in a double bind situation | | ✓ | |
| | | | Correlations | Perceived social support | | ✓ | |
| 16 | Daga et al. (2020) | $N=24$<br>Students from China, 50%; India, 29.17%; Nepal, 8.33%; Pakistan, 4.17%; Sri Lanka, 4.17%; Bangladesh, 4.17% | Qualitative<br>Interpretive phenomenological analysis<br>Semistructured individual interview | Social relationships | | ✓ | |
| | | | | Intrapersonal factors | ✓ | | |
| | | | | Time | | ✓ | |
| | | | | Material resources | | ✓ | |
| | | | | Engagement in activity or change in environment | | | ✓ |
| | | | | Continued distress | | ✓ | |
| 17 | Wei et al. (2012a) | $N=183$<br>CIS, 45%<br>Chinese immigrants, 55% | Quantitative<br>hierarchical regression analyses | Secure attachment to God | ✓ | | |
| | | | | Length of time being a Christian | ✓ | | |
| | | | | Avoidant attachment to God | ✓ | | |
| | | | | Perceived stress | ✓ | | |
| | | | | Perceived stress x Avoidant attachment to God | ✓ | | |
| 18 | Nam et al. (2021) | CIS: $N=16$ | Qualitative<br>Phenomenology<br>Interviews | Racially traumatic experience and risk factors in social and cultural life | | ✓ | |
| | | | | Confusions about Racism in Academic Life | | ✓ | |
| | | | | Burnout, homesickness, and the dilemma | ✓ | | |

**Table 1** (continued)

| No | Author/year | Participants | Research designs; analysis | Factors | *P* | *E* | *B* |
|---|---|---|---|---|---|---|---|
| 19 | Lai et al. (2021) | *N* = 20<br>CIS in: USA, 20%; Canada, 80% | Qualitative<br>Phenomenology<br>Focus group interviews | COVID-19-related stressors | | ✓ | |
| | | | | Coping Strategies and Support Systems | | ✓ | ✓ |
| 20 | Li et al. (2017) | CIS: *N* = 13 | Qualitative<br>Semistructured interview | Acculturation difficulties | ✓ | ✓ | |
| | | | | Experience of growth | ✓ | | |
| | | | | Seeking and receiving help | | | ✓ |
| 21 | Zhou et al. (2018) | CIS: *N* = 15 | Qualitative<br>Semistructured interviews | Acculturative stressors | ✓ | ✓ | |
| | | | | Leisure | | | ✓ |
| 22 | Park et al. (2017) | *N* = 9<br>Students from<br>China: *N* = 1<br>Korea: *N* = 5<br>Taiwan: *N* = 3 | Qualitative<br>Semistructured interviews | Acculturative stresses and challenges | ✓ | ✓ | |
| | | | | Utilized coping strategies | | | ✓ |
| 23 | Xu et al. (2020) | CIS: *N* = 8 | Quantitative (Pilot)<br>*T*-tests | Acceptance and commitment therapy | | ✓ | |
| 24 | Chen et al. (2021) | CIS: *N* = 6 | Mixed-method (Pilot)<br>Qual: interviews<br>Quan: Repeated measures ANOVA | Chinese-translated behavioral activation treatment | | ✓ | |
| | | | | Language difficulties | ✓ | | |
| | | | | A lack of stable social relationships | | ✓ | |
| | | | | Academic/career-related pressure | | ✓ | |
| | | | | Utilized coping resource | | | ✓ |
| 25 | Amado et al. (2020) | *N* = 171<br>Students from China, 46%; India, 14%; Other countries < 10% each | Quantitative<br>Regression | Personal-enacted identity gaps | ✓ | | |
| | | | | Acculturative stress | ✓ | | |
| | | | | Independence self-construal | ✓ | | |

**Table 1** (continued)

| No | Author/year | Participants | Research designs; analysis | Factors | *P* | *E* | *B* |
|---|---|---|---|---|---|---|---|
| 26 | Bai (2016) | CIS: $N=267$ | Quantitative<br>Factor analysis<br>Hierarchical regression | Language insufficiency | ✓ | | |
| | | | | Social isolation | | ✓ | |
| | | | | Perceived discrimination | | ✓ | |
| | | | | Academic pressure | | ✓ | |
| | | | | Guilt toward family | ✓ | | |
| | | | | Acculturative stress | ✓ | | |
| 27 | Liao and Liang (2021) | CIS: $N=4$ | Qualitative<br>semistructured interviews | Fear of not being perfect | ✓ | | |
| | | | | Communication difficulties | ✓ | ✓ | |
| | | | | Discriminations on language ability | | ✓ | |
| | | | | Utilizing coping strategies | | | ✓ |
| 28 | Wang et al. (2012) | CIS: $N=507$ | Quantitative<br>multinomial logistic regressions | Prearrival self-esteem | ✓ | | |
| | | | | Prearrival problem-solving appraisal | ✓ | | |
| | | | | Prearrival maladaptive perfectionism | ✓ | | |
| | | | | Social support | | ✓ | |
| | | | | Coping strategies: acceptance, reframing, and striving | | | ✓ |
| 29 | Rice et al. (2012) | $N=295$<br>Students from China, 43.7%; India, 56.3% | Quantitative<br>Multiple regression | Self-critical perfectionism | ✓ | | |
| 30 | Bertram et al. (2014) | CIS: $N=8$ | Qualitative<br>Semistructured interviews | Acculturative Stress | ✓ | | |
| | | | | Social support | | ✓ | |
| 31 | Choy and Alon (2019) | CIS: $N=1$ | Qualitative<br>Case study | A comprehensive approach for mental health treatment | | ✓ | |

**Table 1** (continued)

| No | Author/year | Participants | Research designs; analysis | Factors | *P* | *E* | *B* |
|---|---|---|---|---|---|---|---|
| 32 | Lértora and Sullivan (2019) | CIS: *N* = 5 | Qualitative<br>Transcendental phenomenological approach<br>Focus group and individual semistructured interviews | Family connection | | ✓ | |
| | | | | Needs of "working harder than others" | ✓ | | |
| | | | | Social support | | ✓ | |
| | | | | Uncertainty about university-to-work transition | ✓ | | |
| | | | | Optimism under pressure | ✓ | | |
| 33 | Lu et al. (2018) | CIS:*N* = 9 | Qualitative<br>Consensual qualitative research<br>Semistructured interview | Sociopolitical context | | ✓ | |
| | | | | Cultural adjustment challenges | | ✓ | |
| | | | | Social support | | ✓ | |
| | | | | Nonsocial coping strategies | | | ✓ |
| 34 | Li et al. (2021) | CIS: *N* = 1045 | Quantitative<br>Survey | Gender | ✓ | | |
| 35 | Yan and Cardinal (2013) | CIS: *N* = 20<br>All-female | Qualitative<br>Semistructured interview | Participant in physical activity | | | ✓ |
| 36 | Wei et al. (2012c) | *N* = 143<br>Students from China, 69%; South Korea, 18%; Taiwan, 13% | Quantitative<br>Hierarchical regression | General advisory working alliance × Perceived English proficiency × Acculturative stress | ✓ | ✓ | |
| | | | | Cross-cultural advisory working alliance × Perceived English Proficiency × Acculturative stress | ✓ | ✓ | |
| | | | | General stress | ✓ | | |
| | | | | Acculturation stress | ✓ | | |
| 37 | Zhang and Goodson (2011) | CIS: *N* = 508 | Quantitative<br>A simple and a multiple regression | Adherence to the host culture | ✓ | | |
| | | | | Adherence to the home culture | ✓ | | |
| | | | | Social connectedness with Americans | | ✓ | |

**Table 1** (continued)

| No | Author/year | Participants | Research designs; analysis | Factors | *P* | *E* | *B* |
|---|---|---|---|---|---|---|---|
| 38 | Du and Wei (2015) | CIS: $N=213$ | Quantitative<br>Path analysis | Acculturation | ✓ | | |
| | | | | Enculturation | ✓ | | |
| | | | | Mainstream social connectedness | | ✓ | |
| | | | | Ethnic social connectedness | | ✓ | |
| 39 | Wu and Buchanan (2019) | CIS: $N=30$ | Quantitative<br>Multilevel path analysis | State mindfulness | ✓ | | |
| | | | | Emotion suppression coping strategy | | | ✓ |
| | | | | Direct action coping strategy | | | ✓ |
| | | | | Perceived stress | ✓ | | |
| 40 | Tsai et al. (2021) | CIS: $N=124$–139. Lost some participants during survey | Quantitative<br>Multivariate analysis of variance | Emotional disclosure writing/peer-helping writing conditions | | ✓ | |
| | | | | Time × Condition × Rumination | ✓ | ✓ | |
| 41 | Lin and Dmitrieva (2019) | CIS: $N=150$ | Quantitative<br>Mediated moderation model | Ideal high arousal positive affect | ✓ | | |
| 42 | Liu et al. (2022)[1] | CIS: $N=167$ | Quantitative<br>Mediation and Moderation | Acculturative stress | ✓ | | |
| | | | | Mindfulness | ✓ | | |
| 43 | Wei et al. (2012d) | CIS: $N=383$ | Quantitative<br>Hierarchical regression analysis | Ethnic social connectedness × perceived racial discrimination | | ✓ | |
| | | | | Perceived general stress | ✓ | | |
| | | | | Perceived racial discrimination | | ✓ | |
| 44 | Wei et al. (2012b) | CIS: $N=188$ | Quantitative<br>Hierarchical multiple regression | Forbearance coping × acculturative stress | ✓ | | ✓ |
| | | | | Forbearance coping × identification with heritage culture × acculturative stress | ✓ | | ✓ |
| | | | | Perceived English proficiency | ✓ | | |
| | | | | Acculturative stress | ✓ | | |
| | | | | Identification with heritage culture | ✓ | | |

**Table 1** (continued)

| No | Author/year | Participants | Research designs; analysis | Factors | *P* | *E* | *B* |
|---|---|---|---|---|---|---|---|
| 45 | Wei et al. (2015) | CIS: $N=201$ | Quantitative<br>Hierarchical regression analyses | Perceived language proficiency | ✓ | | |
| | | | | Perceived language discrimination | | ✓ | |
| | | | | Self-esteem | ✓ | | |
| | | | | Perceived language discrimination × self-esteem | ✓ | | |
| | | | | Perceived language discrimination × ethnic social connectedness | | ✓ | |
| | | | | Perceived language discrimination × mainstream social connectedness | | ✓ | |
| 46 | Tsai and Wei (2018) | CIS: $N=258$ | Quantitative<br>Hierarchical multiple regression | Depression | ✓ | | |
| | | | | Perceived discrimination | | ✓ | |
| | | | | Internalization coping | | | ✓ |
| | | | | Gender | ✓ | | |
| | | | | Perceived racial discrimination × internalization coping × gender | ✓ | ✓ | ✓ |
| | | | | Perceived racial discrimination × resistance coping × gender | ✓ | ✓ | ✓ |
| 47 | Tsai and Kimel. (2021) | CIS: $N=178$ | Quantitative<br>Moderated mediation models | Emotional support giving × face concerns | ✓ | ✓ | |

**Table 1** (continued)

| No | Author/year | Participants | Research designs; analysis | Factors | *P* | *E* | *B* |
|---|---|---|---|---|---|---|---|
| 48 | Han et al. (2013) | CIS: *N* = 130 | Quantitative<br>Survey<br>*t*-test and analysis of variance | Self-evaluation of current health | ✓ | | |
| | | | | Relationship with advisor | | ✓ | |
| | | | | Exercise regimen | | | ✓ |
| | | | | Academic stress | ✓ | | |
| | | | | Language difficulties | ✓ | | |
| | | | | Social isolation | | ✓ | |
| | | | | Long-distance marriage/relationship | | ✓ | |
| | | | | Culture shock | ✓ | ✓ | |
| | | | | Homesickness | ✓ | | |
| | | | | Future uncertainty/insecurity | ✓ | | |
| | | | | Financial burden | ✓ | | |
| | | | | Lack of coping strategy/leisure activities | ✓ | ✓ | |
| | | | | Unfamiliarity with mental health counseling | ✓ | | |
| | | | | Lack of spiritual/religious life | ✓ | | |
| 49 | Liao and Wei (2014) | CIS: *N* = 370 | Quantitative<br>Hierarchical Multiple Regression | Academic stress | ✓ | | |
| | | | | Family recognition through achievement | ✓ | | |
| | | | | Academic stress × contingency of self-worth on academic competence | ✓ | | |

Notes: *N* number, *P* personal factors, *E* environmental factors, *B* behavioral factors. [1]This article was published Online First September 27, 2021. We included it in the analysis and cited it as 2022 with complete information on issue and volume numbers

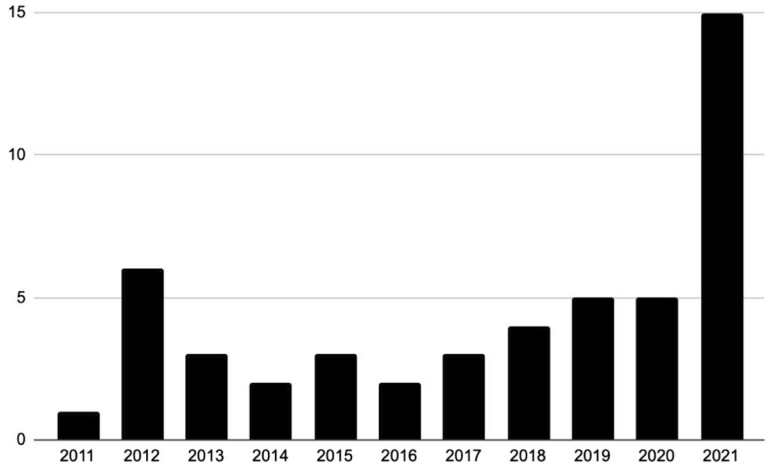


**Fig. 2** Number of selected articles in publication years

2017, p. 235). In the selected articles, 104 personal, 68 environmental, and 18 behavioral factors were identified. Personal factors are related to culture, academic and future plans, personal traits, and physical health. Environmental factors can be categorized into interpersonal relationship difficulties, discrimination, environmental and cultural differences, and support or treatment. Behavioral factors included utilizing coping strategies, engaging in activities, exercising, and seeking help.

## Personal Factors

### Culture

Around 41% of selected articles ($n=20$) involve culture-related personal factors. Acculturation stress and Chinese traditional values are two main factors these articles discussed. Fourteen articles studied cultural intelligence, acculturation, and acculturative stress which account for 16% ($n=16$) of personal factors. During the process of adapting to the US culture (i.e., acculturation), CISs may use their cultural intelligence to deal with cultural-related difficulties. When the amount of challenges is beyond their competency, their acculturative stress will increase (e.g., Bertram et al., 2014; Li et al., 2017). Four studies included in this review emphasize the impact of Chinese traditional values on CISs' wellness, and the impact is usually negative. Those traditional values included "mianzi" (i.e., face concerns or reputation), family obligation, and Confucian middle way (e.g., Tsai & Kimel, 2021). Another three studies focused on CISs' adherence and connections with the culture of their home country and host country. Adherence to home/ethnic culture, adherence to host/mainstream culture, and identification with heritage culture were associated with life satisfaction or emotions (i.e., positive and negative affect), depression, and psychological distress (Du & Wei, 2015; Wei et al., 2012b; Zhang & Goodson, 2011).

### Academic and Future Plan

Almost 29% ($n = 14$) of selected studies indicated academic-related factors' impact on CISs' mental health. Participants of Lian and Wallace's (2020) research reported academic stress as one of seven stressors for CISs in the USA. Liao and Wei (2014) further identified that academic stress is negatively associated with positive affect. Language barriers, a commonly studied factor among studies included in this review ($n = 10$), were viewed as causes of depression and anxiety (e.g., Lijun, 2019; Su et al., 2021). In two articles, future plans were considered the factor that brings changes in mental health, since stress, uncertainty of the returning plan, and the decision to continue studying abroad predicted a deteriorated mental health status (Lian & Wallace, 2020; Song et al., 2021). Moreover, some studies highlighted factors of concern and uncertainty about future plans (e.g., job seeking), which increased CISs' stress and depression (e.g., Han et al, 2013; Lértora & Sullivan, 2019).

### Personal Traits

Sixteen articles discussed the negative impact of CISs' personality or psychological status on their mental health, which involved perfectionism, burnout, and perceived stress. CISs who are perfectionists or who perceive more stress are more likely to have unhealthy mental status (e.g., Lian & Wallace, 2020; Rice et al., 2012). CISs' mental health protective personal factors included being able to perceive social support and feeling comfortable with disclosing distress (e.g., Wang et al., 2015). Sixteen studies in this review tested how other personal traits such as age, self-esteem, gender, and religion affect CISs' mental health (e.g., Li et al., 2021; Wang et al., 2012). Li et al. (2013) showed that younger CISs tend to have more severe mental health issues, and Song et al. (2021) pointed out that a certain age range (i.e., 20 to 23) was significantly associated with higher scores in PTSD, depression, anxiety, and stress. Four studies respectively examined personal traits of lower self-efficacy, lower self-esteem, and lower prearrival agency (i.e., being too nonassertive in interpersonal problems), which suggested that these are potential factors that could contribute to CIS's stress and negative affect (e.g., Qi et al., 2018; Wei et al., 2015). In addition, two studies underlined the influence of religion that lack of spiritual life, different attachment styles to God, and the length of time being a Christian are associated with life satisfaction among Christian CISs (Wei et al., 2012a; Han et al., 2013).

### Physical Health

Six articles reached a consensus that CISs' physical health can affect their mental health. When talking about participants' experiences of distress in a qualitative study, poor physical health was frequently discussed (Daga et al., 2020). Another study investigated that self-rated health status is associated with anxiety, stress, and post-traumatic stress disorder scores (Han et al., 2013; Song et al., 2021). Fear of

COVID-19 was also a personal factor about physical health, as students worried about themselves or their family or friends being infected during the pandemic (Lai et al., 2021; Ma & Miller, 2021).

## Environmental Factors

### Social Connections

There are 12 selected articles that studied CISs' social connections. Two of them found that CISs' social connectedness with both Americans and Chinese is related to their psychosocial adjustments and levels of depression (Sun et al., 2021; Zhang & Goodson, 2011). Those findings were consistent with the other four studies, CISs' general social connection, social connectedness in mainstream society, and social connectedness in the ethnic community would influence CISs' well-being (e.g., Du & Wei, 2015). Furthermore, the remaining six articles indicated the association between CISs' mental health and their connections with romantic partner, family, peers, and advisors (e.g., Han et al., 2013; Qi, et al., 2018).

### Discriminations

A total of 10 studies underlined that discrimination creates an unwelcome environment that brings psychological problems to CISs. These factors accounted for around 29% ($n = 18$) of the environmental factors. Xie et al. (2021) illustrated that stereotypes of wealth-flaunting CISs intensified CISs' tense relationship with Americans and resulted in their psychological issues such as self-blaming and lower collective self-esteem. The remaining nine articles revealed racially traumatic experiences and perceived discrimination as factors contributing to CISs' anxiety and depression (e.g., Nam et al., 2021), and three of them specifically studied perceived discrimination on CISs' English proficiency (e.g., Ma et al., 2022; Wei et al., 2015). In addition, three articles revealed that the interaction between discrimination and social connection, gender, coping strategies, and self-esteem also had a significant impact on CISs' mental health on depression and anxiety (e.g., Tsai & Wei, 2018; Wei et al., 2015).

### Environmental Difficulties and Cultural Differences

Among the 17 factors categorized into this subtheme, 65% of them ($n = 11$) are environmental difficulties. CISs experienced environmental difficulties such as safety concerns and academic/career-related pressure due to environmental factors including place of residence, COVID-19, and sociopolitical context (e.g., Chen et al., 2021; Lu et al., 2018; Song et al., 2021; Xu et al., 2021). Studies also indicated factors that made CISs' decision of whether or not returning to their home country became more complex. The changing policies, the intersectionality of policies between the USA and China, and the "double-blind situation" with the opposite messages resulted in conflicts, confusion, and CISs' feelings of depression, anxiety, guilt, and stress (Ma

& Miller, 2021; Xu et al., 2021). In addition, cultural difference factors were identified in four articles. The new living environment, the cultural differences between home country and host country, and the traditional Chinese culture-defined achievement for family recognition added to CISs' challenges and pressures (Liao & Liang, 2021; Liao & Wei, 2014; Lu et al., 2018; Park et al., 2017).

#### Intervention and Support

Seventeen factors illustrated in 15 selected studies suggested that the good function of CISs' mental health was stemming from the intervention or support they received. Four articles proposed ways of treatment and intervention, through revising techniques, examining the treatment's effectiveness, and emphasizing counselors' multicultural competency. The therapeutic intervention introduced by these articles were Chinese-translated behavioral activation treatment, culturally adapted dialectical behavior therapy, a comprehensive approach to CISs' mental health treatment with suggested guidelines, and acceptance and commitment therapy (Chen et al., 2021; Cheng & Merrick, 2017; Choy & Alon, 2019; Xu et al., 2020). Twelve out of the 16 factors in this subtheme were specifically about support and resources for CISs which were their mental health protectors, including perceived social or relational support from family, friends, or people around them as well as basic, financial, and medical material resources (e.g., Bertram et al., 2014; Daga et al., 2020; Tsai, et al., 2021; Xu et al., 2021).

#### Behavioral Factor

There were 18 behavioral factors investigated by the selected articles ($n = 14$) which are relatively less than the other two types of factors. The most frequently mentioned behavioral factor is utilizing coping strategies, which account for 13 out of the 18 behavioral factors. Coping strategies and coping styles that affect CISs' mental health included direct action, acceptance, reframing, and striving coping strategies (e.g., Wang et al., 2012; Wu & Buchanan, 2019). Of these coping strategies, emotional suppression coping strategies have been confirmed to exacerbate mental health issues, and internalization or forbearance coping can affect CISs' mental health by interacting with other factors such as acculturative stress and gender (e.g., Liao & Liang, 2021; Wei et al., 2012b). Four other behavioral predictors of better mental health status were participating in physical activity, leisure, engaging in activities or changing environment, and seeking and receiving help (e.g., Li et al., 2017; Yan & Cardinal, 2013; Zhou et al., 2018).

## Discussion

Figure 2 shows that the number of studies on CISs has increased significantly since 2020. One important reason for this increase may be related to COVID-19. Increasing COVID-related racism and discrimination toward Chinese triggered more

research studies on factors that affect CISs' well-being. The results of this review provide us with timely and helpful information to support the large number of CISs in the USA. Findings of this review also point us to future research on identifying causal factors that may directly contribute to CISs' mental health and overall well-being. Findings are also helpful for higher education institutions to develop effective and culturally meaningful support infrastructure to ensure CISs' academic and social success.

### Practical Implications

The three categories of factors related to CISs' mental health provide valuable information to help understand this large group of international students in the USA from different aspects. For personal factors, Chinese traditional values such as dependence on family and the Confucian middle way made CISs rely on their parents or surrounding others and choose to avoid "showing off," which may negatively impact their mental health after they arrived in the USA that values self-reliance and active class participation (e.g., Ma et al., 2022; Tsai & Kimel, 2021). Family recognition through achievement and filial piety are considered concepts that come from the traditional Chinese culture and have been described as double-edged swords as they bring both motivation and pressure to CISs (Liao & Wei, 2014; Wang, 2016). The influence of these traditional values that CISs inherited from home country is significant and indelible. Assisting students to be aware of the negative connotation of these influences and consciously adapting to their study abroad life should be an effective way to reduce the negative impact.

Additionally, acculturation stress, English proficiency, and physical health are significant predictors of CISs' mental health since those factors are associated with their quality of life, well-being, life satisfaction, depression, and psychological distress (e.g., Amado et al., 2020; Bai, 2016; Li et al., 2013; Ma, 2021; Wei et al., 2012c). To better help CISs, before they come to the USA, universities may provide sufficient orientation information regarding the school and the western culture to increase CISs' readiness. For example, events to practice English with warm and considerate conversational partners can be helpful for CISs to overcome their initial anxiety around language and culture barriers. Additionally, information related to their daily functioning is critical for CISs and all other international students. For example, health insurance plans, school policy of wearing masks, and sports clubs that encourage CISs engaged in more physical exercises may help relieve some of their concerns regarding their physical health and build social connections with other students.

For environmental factors, good connections with society and its people make CISs feel closer to the community they live in which can increase their life satisfaction and sense of belonging. Studies explored the influence of CISs' social relationships on their well-being and revealed factors of relationships with romantic partners and peers are associated with CISs' mental health (e.g., Chen et al., 2021; Sun et al., 2021). Therefore, institutions may need to organize more events and orientations to provide opportunities for building new interpersonal relationships. As

Lian and Wallace (2020) suggested, the cultural humility of professors and staff in international affairs is associated with CISs' mental health. Thus, preparing college personnel's intercultural competency to reduce discrimination and microaggressions is necessary to improve CISs' experience.

University counseling service providers may benefit from studies that value clients' cultural backgrounds and personal experiences. This review identified treatments or interventions that may help promote CISs' mental health and emphasize the importance of counselors' intercultural competency. In alignment with existing literature, this study suggested counselors consider clients' language and cultural backgrounds to better understand their experiences, perspectives, and feelings (Kim et al., 2019; Lian & Wallace, 2020). In addition, providing a supportive environment is essential; a counseling session free of judgment may make CISs feel safe and comfortable when discussing their conflicts and concerns (Cheng & Merrick, 2017). A supportive environment is culturally responsive and personally meaningful. For instance, counselors may need to check with their clients if they want to bring in a translator or if they prefer to have a one-on-one conversation with a slower pace. This review identified supportive resources as protectors of CISs' mental health, which is supported in relevant studies (Daga et al., 2020; Lai et al., 2021). In the counseling sessions, it is worthwhile for counselors to ask about the existing resources CIS clients may already have, and then introduce the kind of support that can be helpful and available to them. This requires counselors to become familiar with relevant resources, including but not limited to writing centers, international student organizations, and immigration offices (Banjong, 2015). Moreover, as professionals working at educational settings where equity and diversity are promoted, counselors need to encourage CISs to use self-advocacy and understand the importance of advocating on their behalf when necessary (Choy & Alon, 2019). Finally, CISs are a diverse group with unique individual characteristics as well as culture/subculture differences within the group (Ching et al., 2017). Counselors should never assume their perspectives and experiences without knowing clients' backgrounds and stories.

### Research Implications

Although this review provides helpful information on understanding CISs' overall well-being and mental health, few studies identified the causal relationship between factors and the outcomes through empirical studies. Future research needs to further define variables within culturally meaningful contexts and investigate the effects of these variables on CISs' successes academically, personally, and socially. This review also suggests that fewer studies have applied mixed-method approaches to exploring this complex issue, which calls for additional research.

According to previous studies, risk behaviors such as smoking or binge drinking can be some behavioral factors that affect international students' mental health (Sa et al., 2013). However, references that addressed those factors did not meet the inclusion criteria of this study. More specifically, most research that studies mental health-seeking behavior focuses on discussing what made CISs not seek mental

health support (e.g., Lian et al., 2020) rather than how their decision to not receive professional help affects their mental health. Mixed-method studies that include quantitative and qualitative approaches may help identify causal factors contributing to CISs' mental health. For example, Chinese prefer pragmatic and goal-oriented services (Chong & Liu, 2002). Thus, besides telling them to gradually enhance personal traits (e.g., self-efficacy), a list of several behaviors/reactions that they can directly and immediately feel the positive feedback or results may be more effective. Additional research can examine the effects of goal-oriented support on CISs' mental health through experimental group comparisons. The feasibility and acceptability of doing mindfulness-based breathing exercises with CISs is a good example (Chen et al., 2021). However, as Table 1 lists, the articles this review selected that study behavioral factors are very limited. We encourage future studies to investigate more behavioral factors. In this way, research can advocate the importance of certain behaviors in predicting and affecting psychological health, enable professionals who work with CISs to get to know their mental health status by examining risk or protective behavioral factors, and provide suggestions for CISs who are likely to prefer directive services about what specifically they can do to enhance well-being. Another direction of future research is to conduct more qualitative research. Quantitative research uses scales to test whether specific factors have an effect on mental health, and qualitative research can delve deeper into how those factors interact with each other and how the interactions influence participants' experiences and feelings.

### Limitations

This systematic literature review has a few limitations. First, we define CISs as CISs in the USA. This inclusion criterion might exclude some valuable information about CISs who study in other countries. Similarly, we only included publications in English from peer-reviewed journals. This criterion may limit our review on quality articles published in other languages or non-refereed publications such as government documents or policy reports.

## Conclusion

Through this systematic review, we identified 49 articles published by refereed journals since 2010 to examine the factors that can affect the mental health status of CISs who are studying at US universities. We synthesized the results by grouping factors into three categories based on social cognitive theory: personal, environmental, and behavioral (Corey, 2017, p. 235). Findings of this review contribute to the existing literature with valuable and timely information on factors affecting CISs' well-being. Findings further direct us to future research in identifying causal relationships between effective treatments and CISs' mental health outcomes. This study is also practically meaningful with culturally relevant information to help improve the support systems in promoting the overall well-being of all international students in the USA.

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## Declarations

**Competing Interests** The authors declare no competing interests.

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