

# Exploring Research Motivations on Academic Adjustment and Success Among International Graduate Students in Engineering Disciplines across U.S. Universities: A *Meta-Synthesis*

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**Abstract—** This (research full paper) meta-synthesis explores why researchers study the challenges faced by international graduate students in STEM education at U.S. universities. Despite their crucial role in diversifying the academic and technological landscape with their unique experiences and perspectives, these students face challenges adapting to unfamiliar academic and cultural settings. Unfortunately, existing literature often overlooks the specific experiences of engineering students, particularly those from non-English speaking backgrounds. Research often generalizes international student experiences or focuses only on English-speaking contexts. Without enough support, the talent pipeline is in danger, which is worrying because international graduate students are vital for maintaining diversity and fueling economic growth and innovation in the United States. Understanding researchers' motivations in exploring this field is important to grasp its significance and identify areas necessitating further investigation.

Through a systematic review of existing literature, this study aims to uncover the reasons behind research on academic adjustment, support mechanisms, and success rates among international graduate students in the United States. This work-in-progress scholarship of research is guided by the question of what motivates current research on academic adjustments, support, and success among international graduate students in Science and Engineering programs within the United States. We identified 38 articles from a pool of 14,765 articles from online databases using our inclusion-exclusion criterion. Each article then underwent a thorough evaluation based on our selection criteria and quality evaluation rubric to ensure the rigor and validity of the final selection process. We analyzed the data and categorized the motivations by themes by using an inductive approach, identifying themes based on what we observed in each paper. Theoretical frameworks such as social cognitive theory and acculturation theory are then applied to discuss our findings and analysis. We used this theory because it shed light on where we might develop this research.

Our findings suggest that understanding the intersection of acculturation theory and social cognitive theory can illuminate the institutional support and psychological factors influencing international graduate student's academic success in science and engineering fields. We identify three key motivation areas: Institutional, Social/Cultural, and Psychological. We observe a

variety of motivations driving work in this field, such as addressing issues like racism and discrimination, understanding how cultural experiences affect success, and exploring new ideas like resilience to support students' adjustment. These reasons push us to tackle problems such as racism, learn how culture affects success, and help students stay strong. For a more comprehensive understanding, we suggest combining ideas from different theories to understand what helps international graduate students succeed. We think it's important to study more kinds of students and make research methods better. This can help us make a fair environment for everyone in universities.

**Keywords—** International Graduate Students, STEM Education, Academic Adjustment, Success Factors, U.S. Universities

## I. INTRODUCTION

For decades, international students have significantly enriched the academic and technological landscapes of the United States, bringing diverse experiences, perspectives, and skills to universities across the nation [1]. Recognizing the immense benefits of this diversity in the science and engineering landscape, many U.S. universities tailor targeted recruitment efforts to diversify the international student population [2]. As a result, every year, an increasing number of engineering international students come to the United States from all regions of the world, with diverse sociocultural backgrounds and varying levels of academic preparedness [1-4].

International science and engineering graduate students face significant challenges as they adapt to unfamiliar academic and cultural environments [5]. Transitioning to graduate-level studies in a foreign country presents various obstacles, including language barriers and cultural adjustment issues. To support the success of these students, tailored academic and on-campus resources are essential [6]. However, the existing literature often overlooks the specific challenges faced by engineering students, particularly in terms of campus adjustment and academic rigor. Research focuses either on overall international students' experiences or only on English-speaking contexts, leaving a research gap in understanding the experiences of science and engineering students from Asian countries and other non-

English-speaking regions [7]. Given that this demographic constitutes the largest group of international students in the United States, addressing their unique needs is crucial.

To address the research need concerning academic adjustment and challenges faced by international STEM students from non-English speaking backgrounds, it is crucial to delve into the motivations of researchers in this field. By understanding what drives researchers to explore this topic, we can grasp why this topic matters and identify areas where further investigation is needed. For example, knowing the specific difficulties these students face can help us create better support systems for them in universities. Researchers like [1] have shown that tailored help can make a big difference, especially for engineering students from non-English speaking backgrounds. This work is relevant because it highlights the importance of diversity and inclusion in science and engineering. International students, particularly those from non-English speaking regions, bring unique perspectives that enrich academic environments. By addressing their challenges, universities can create a more welcoming atmosphere and benefit from their skills and ideas, crucial for innovation and progress.

The main goal of this meta-synthesis is to analyze existing literature on how international graduate students in STEM fields adjust and succeed in U.S. universities. Specifically, we aim to understand why researchers study the academic experiences of these students in science and engineering programs. To achieve this, we'll answer the question: What drives research on academic adjustments, support, and success among international graduate students in Engineering programs in the United States? We answer this research question by carrying out a systematic review of the literature. Findings suggest that researchers are driven to tackle issues of racism and discrimination experienced by international graduate students, understand the impact of cultural experiences on their success, and explore the challenges faced by specific demographics studying in the U.S. These motivations underscore the significance of assimilation, inclusion, resilience, and customized support in assisting international students in navigating academic adjustments. Ultimately, this synthesis aims to deepen our understanding of these motivations and inform future initiatives.

## II. BACKGROUND OF THE STUDY

Science and engineering education has always been crucial in the United States, driving innovation from the Industrial Revolution to today's digital age. Since the mid-20th century, international students have been coming to study science and engineering here, spurred by initiatives like Fulbright and NDEA [8]. These students bring fresh ideas and help with research, contributing to academic discourse, driving innovation, boosting the economy, and promoting global cooperation and understanding [9]. Described as 'International Graduate Students in the US,' they come from different countries, bringing various cultural backgrounds, and aiming for advanced degrees like master's or PhDs. Their active participation in research endeavors contributes to groundbreaking discoveries and technological advancements, propelling innovation in key sectors such as renewable energy, healthcare, and information technology [10]. Moreover, their

presence bolsters the STEM workforce, addressing skill shortages and filling specialized roles within industries that rely on advanced technical expertise [11]. Beyond academia, these students also make significant economic contributions to the United States, generating substantial revenue through tuition fees, creating job opportunities, and driving innovation-driven growth in various sectors [12]. Their engagement in cultural exchange activities promotes cross-cultural understanding and fosters global citizenship, thereby enhancing diplomatic relations between nations and contributing to a more interconnected world [10].

The literature on the academic adjustment and success of international graduate students in U.S. universities showcases a diverse range of research efforts aimed at understanding their educational experiences. Studies delve into language proficiency, social integration, mentoring relationships, and institutional support mechanisms. Significant findings emphasize the necessity of tailored interventions and policies to meet the unique needs of international graduate students and improve their academic success. Consistent with these developments, the literature is replete with evidence that this student population matters. Researchers are motivated to address overlooked challenges faced by specific subsets of international graduate students, such as racism, nativism, and discrimination [13-14]. Their studies emphasize recognizing and mitigating such barriers to ensure a supportive academic environment for success. Similarly, research also stresses understanding the unique cross-cultural experiences of international graduate students, especially in less selective universities, to provide tailored support for academic outcomes and overall well-being [15]. Other studies explore the transition experiences and academic success of international graduate students from regions like China, recognizing cultural and educational differences that require targeted support strategies [16-17]. These motivations deepen understanding of challenges faced by international graduate students in engineering disciplines, emphasizing the importance of tailored interventions for their academic adjustment and success in U.S. universities.

However, despite the growing body of literature, gaps and areas of disagreement persist. We are still missing insight on nuanced examinations of the intersectionality of identities and experiences among international graduate students in science and engineering disciplines, including considerations of gender, nationality, and socioeconomic background. Some studies emphasize the role of individual factors such as resilience and self-efficacy in academic adjustment, while others underscore the significance of structural barriers and institutional culture. Debates also exist regarding the effectiveness of different support mechanisms, ranging from orientation programs to peer mentoring initiatives. Social cognitive theory and acculturation theory could provide knowledge-advancing insights that build on these early works. In the next sections, we discuss these theories and their relevance in the current work, elucidating how they offer frameworks for understanding the complex interplay of individual, social, and institutional factors shaping the academic adjustment and success of international graduate students in science and engineering disciplines.

A. “Cognitive theory” and “Acculturation theory”: A lens for understanding “success” and “adaptation”

We used perspectives on social cognitive theory and acculturation theory to interpret categorized themes of motivations. Social cognitive theory and acculturation theory offer valuable frameworks for understanding the academic adjustment and success of international graduate students in STEM fields at U.S. universities. Cognitive theory, used as a lens for understanding success, focuses on cognitive processes, self-regulation, and social learning. Proposed by Bandura (1986), it helps analyze how students navigate challenges and succeed in unfamiliar environments by examining factors like self-efficacy beliefs and goal-setting behaviors [18]. Acculturation theory, serving as a lens for understanding adaptation, emphasizes the interplay between cultural identities and academic environments. Developed by Berry (2005), it sheds light on how students negotiate their cultural identities while adapting to the demands of U.S. universities. By examining acculturation processes and strategies, including cultural maintenance and integration, we gain insights into how students from diverse backgrounds navigate their academic journeys [19].

Previous research in this field has utilized social cognitive theory and acculturation theory to understand various aspects of academic adjustment and success. Researchers have applied cognitive theory, particularly focusing on self-efficacy beliefs and the assimilation process, to investigate the academic experiences of international graduate students [20-21]. Similarly, researchers have employed acculturation theory to explore how cultural adaptation and acculturative stress impact the well-being and academic performance of international students [22]. These studies demonstrate the significance of cognitive processes and cultural adaptation in shaping the experiences of international graduate students in STEM fields. By integrating these two theories, researchers have gained valuable insights into the multifaceted factors influencing the academic adjustment and success of international graduate students, contributing to a more comprehensive understanding of their experiences.

Integrating these theories into our analysis extends the existing literature on the academic adjustment and success of international graduate students in STEM fields, providing a more nuanced understanding of the challenges they face. By identifying and categorizing motivations into three broad themes—Institutional, Social/Cultural, and Psychological—we not only illuminate the multifaceted factors driving research but also highlight the interconnectedness of these themes in shaping students' experiences. This comprehensive approach enhances our ability to address the diverse needs of international graduate students and informs the development of targeted support mechanisms to foster their academic success.

III. METHODS AND ANALYSIS: THE SYNTHESIS APPROACH

We conduct a comprehensive meta-synthesis of literature focusing on international graduate students in Science and Engineering programs at U.S. universities. We focus on database searches to gather relevant materials. Initially, we systematically explored various search engines and digital libraries, including ERIC, ProQuest, EBSCO, Engineering

Village, PsycArticles, and Google Scholar. The databases selected for the study, for example, Google Scholar and ProQuest, were chosen for their relevance to the field and their comprehensive coverage of academic literature. Additionally, we used databases like PsycArticles, Engineering Village, and ERIC, which are highly regarded for research focused on perceptions and experiences and offer access to a broad spectrum of peer-reviewed journals and conference papers. This approach ensured that we captured a more comprehensive and relevant body of literature, supporting the robustness of our analysis.

We used keywords such as “international graduate students in the USA,” “Engineering Education,” “STEM Education,” “academic adjustments,” “campus resources,” and “Success” to conduct these searches. Initially, we looked for studies only involving international graduate students in Engineering programs at U.S. universities, but we found limited results. So, we broadened our search to include studies about international graduate students in various STEM programs, but there still wasn't much relevant literature. Finally, we widened our requirements to consider research about international graduate students in any subject, as long as it includes some STEM students.

We used a three-stage screening process for studies to be included in our synthesis. In the first stage of our screening, we downloaded the articles for the second stage screening process. To be downloaded, studies were required to meet our primary inclusion and exclusion criteria (see TABLE I): they had to be empirical (qualitative, quantitative, mixed methods, or meta-analyses), peer-reviewed, conducted within the U.S., and published between 2000 and 2023. Once all of these criteria were fulfilled, the study was then downloaded for further selection. This primary search results in 82 papers, including reviews, conference articles, journal entries, and evaluative studies. In the second stage, we rechecked all the downloaded studies to make sure that the selection criteria were applied correctly, and studies were ready for the final screening process.

TABLE I. PRIMARY INCLUSION AND EXCLUSION CRITERION

SL no	The study is downloaded for further selection once all these criteria are fulfilled	
	Inclusion criteria	Exclusion criteria
1	Graduate Level Education such as master's and doctoral level.	Other stages of education, such as school, high school, college, and undergraduate level.
2	Empirical studies.	Literature assessments or reviews. Theoretical work, such as frameworks, reviews, etc.
3	Studies focusing on international graduate students (who completed their schools or college or bachelor level education in their home country and then came to the U.S. for higher level education)	Studies solely focus on U.S. native or resident students or other U.S. minority groups of students (Mexican American, Asian American, African American, Indian American, Chinese American, etc.).
4	Studies include challenges, adjustments, and perception issues of international students.	Studies don't include challenges, adjustments, and perception issues of international graduate students.
5	The search covers studies published between 2000 and 2023.	The search covers studies published outside the range of 2000 and 2023.

In the final screening stage, each of these articles underwent a careful assessment. To ensure rigor and validity, we followed the methodology outlined by Margot and Kettler (2019), using a quality evaluation rubric with seven distinct criteria: Objectives and Purposes, Review of Literature, Theoretical Frameworks, Participants, Methods, Results and Conclusions, and Significance [23]. Each criterion is assessed to ensure it is adequately addressed within the article and aligned with our research objective. Selected studies had to specifically address international graduate students and STEM programs, examining challenges, adjustments, and perceptions related to academic success. This screening process, as depicted in Fig. 1, helps us to select 32 studies. We then examined the references of these articles, identifying an additional 6 studies meeting our criteria, bringing the total to 38.

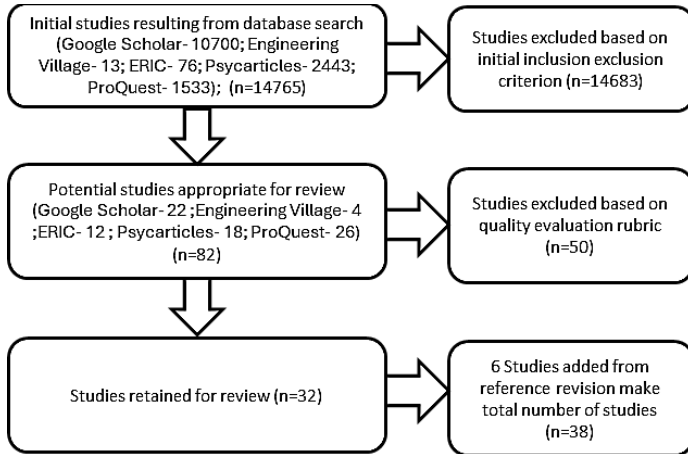


Fig. 1. Diagram of the screening process.

We maintained a mother table in Excel to thoroughly examine the criteria across the 38 papers reviewed. Initially, we identified the themes from this mother table using an inductive approach, categorizing motivations and observations drawn directly from each paper. After identifying these themes, we applied theoretical frameworks such as social cognitive theory and acculturation theory to guide our findings and analysis, as these frameworks offer valuable insights and direction for the development of this research.

Using these frameworks, we organized the identified themes into three broad categories: Institutional, Social/Cultural, and Psychological. For instance, within the Institutional category, sub-themes such as Cultural and Academic Integration Challenges, Institutional Support and Resources, and Professional and Career Development were highlighted, emphasizing the structural and resource-related aspects that influence international students' experiences and their integration within U.S. universities. In the Social/Cultural category, sub-themes like Social Support and Sense of Belonging, Multicultural Interactions and Community Integration, and Cultural Adaptation and Communication emerged, focusing on the social dynamics and cultural exchanges that shape students' social integration and well-being. Lastly, the Psychological category included sub-themes such as Psychological Well-being and Stress Management, Identity and Self-concept Development, and Resilience and Coping

Strategies, which underscored the mental and emotional aspects of international students' adjustment processes.

This structured approach allowed us to place our inductively derived themes under these theoretical categories, providing a nuanced and comprehensive discussion of our findings. By organizing the themes in this manner, we were able to highlight how various institutional, social, and psychological factors interact to influence the academic adjustment and success of international graduate students in engineering disciplines. The application of these theoretical frameworks not only facilitated a deeper analysis of the data but also helped in identifying areas where further research and intervention may be needed to support this student population.

#### IV. ANALYSIS AND FINDINGS

This research is guided by the question of what motivates current research on academic adjustments, support mechanisms, and success rates among international graduate students in Engineering programs within the United States. Understanding these motivations is crucial because it helps us understand challenges faced by students, aids in tailoring support, and promotes inclusivity, ultimately benefiting students' academic achievement and well-being. Research on academic adjustments, support, and success among international graduate students in Science and Engineering programs in the United States is driven by various motivations. Our analysis identified three broad themes: Institutional, Social/Cultural, and Psychological. The Institutional Theme examines factors like Cultural and Academic Integration Challenges, Institutional Support and Resources, and Professional and Career Development [24-26]. These factors shape how international students navigate academic environments. The Social/Cultural Theme explores Social Support and Sense of Belonging [25], Multicultural Interactions and Community Integration [15], and Cultural Adaptation and Communication [27]. These aspects influence students' social integration and cultural adjustment. The Psychological Theme focuses on students' well-being, including Psychological Well-being and Stress Management, Identity and Self-concept Development, and Resilience and Coping Strategies [28-30].

Researchers study these themes for many reasons. Firstly, they are motivated to see issues like racism and discrimination faced by non-English speaking minorities, such as African and Asian international students [14]. Secondly, researchers are motivated to know how experiences in different cultures affect success, such as Asian students in rural areas [15]. Thirdly, this motivation also stems from explaining the challenges specific demographics, such as Chinese students, face when moving to the U.S. for their studies and how they need special help [17]. Also, researchers want to look at new ideas like resilience to help students adjust better [31]. They observed how the pandemic has made things even harder for international students [29]. Most of these motivations are driven to talk about how there are more international students now and why schools need to support them. These motivations are driven to say that we need to understand the different backgrounds and experiences of international students to help them do well in American schools. Knowing these reasons helps schools make better plans to help international students succeed in the U.S. In the following

section, we address what the literature has found along the following themes:

- A. Institutional
- B. Social/Cultural
- C. Psychological

#### A. Institutional

Institutional motivation, as defined by Goerge Mwangi et al. [13] and Zhang [16], summarizes the institutional frameworks and policies designed to address the unique needs and challenges faced by international students. Here institutional motivation is identified as the structural and administrative aspects of higher education institutions that impact the experiences and support systems available to international graduate students especially in science and engineering fields. It encompasses policies, programs, and resources designed to address the unique needs and challenges faced by international students, including issues related to cultural adaptation, academic integration, institutional support services, and professional development opportunities [32-33]. Understanding this motivation is crucial for creating an environment that fosters the academic success, well-being, and career advancement of international graduate students in science and engineering fields within U.S. universities [34-36].

Researchers are motivated to explore the following sub-themes within institutional drivers: (i) Cultural and Academic Integration Challenges [13],[16],[37] (ii) Institutional Support and Resources [25], [32], [38-40], and (iii) Professional and Career Development [26], [33], [41-43]. Understanding these motivations is paramount for several reasons. Firstly, Cultural and Academic Integration Challenges highlight the crucial initial phase of international students' journey, where they must navigate unfamiliar cultural contexts while meeting rigorous academic demands. Understanding this motivation is crucial for creating targeted interventions that facilitate smoother transitions, particularly for international graduate students in science and engineering fields. These disciplines often involve complex coursework, adding an additional layer of difficulty to the adjustment process. Identifying and addressing these motivations can significantly improve the academic experiences of international graduate students in STEM disciplines [44]. Secondly, Institutional Support and Resources, highlighted by Lin [25] and Ajayi [32], delves into the critical role of university programs that provide academic advising and resource accessibility. This motivation is driven by fundamental resources for students for retention and success, offering vital support systems for international students navigating the complexities of higher education [45-46]. For international graduate students in science and engineering disciplines, access to such support is particularly crucial due to the demanding nature of their programs and the need for specialized academic guidance. Lastly, Professional and Career Development, as discussed by Cantu [26] and Ugwu [33], examines the alignment of academic experiences with career trajectories. This motivation underscores the importance of career services that integrate professional training to enhance employability, especially in competitive fields like science and engineering [47]. International graduate students in these disciplines often aspire to pursue careers in academia or industry, making

professional development opportunities essential for their long-term success.

#### B. Social/Cultural

Social/Cultural motivation investigates how interpersonal relationships, cultural exchanges, and sociocultural dynamics impact the academic and social integration of international students in US higher education institutions [48-49]. This theme involves a detailed examination of the social and cultural dynamics within these institutions, focusing specifically on international students. Inspired by scholars like Zhou et al. [28], Wu [29], Deitchman [50], and Khoshlessan & El-Houbi [30], this motivation aims to uncover the underlying dynamics of relationships and exchanges among international students, especially in science and engineering fields. This motivation is driven by communication patterns, teamwork dynamics, and cultural norms prevalent in academic and research settings to understand how they shape international students' academic journey and social integration.

Researchers are motivated to explore the following sub-themes within institutional drivers: (i) Social Support and Sense of Belonging [26-27], [42], [51-52], (ii) Multicultural Interactions and Community Integration [25], [53], and (iii) Cultural Adaptation and Communication [15-16], [54]. Researchers strongly advocated for understanding the importance of this motivation in promoting the academic success, well-being, and overall integration of international graduate students, particularly those studying science and engineering at U.S. universities. Social support networks and a sense of belonging, emphasized by Poyrazli and Grahame [27], are crucial in creating a supportive environment for international students. This motivation is driven by robust social networks that can positively impact academic performance and foster a cohesive community among international students. This motivation arises from the understanding that international students, especially those in science and engineering fields, often encounter isolation and difficulties adapting to new cultural environments, making social support networks vital for their academic achievement and emotional health. Secondly, multicultural interactions and community integration, emphasized by Lin [25] and [48], are crucial for fostering understanding and collaboration among a diverse student population, enhancing the learning environment, and preparing students for global professional networks. This holds particular significance for international graduate students in science and engineering, who frequently engage in collaborative research settings that extend beyond national borders. Recognizing the motivations behind this research underscores the importance of creating inclusive environments that equip students to thrive in today's interconnected professional world. Finally, cultural adaptation and communication are essential for navigating the complex social and academic landscapes of U.S. universities, involving overcoming language barriers and understanding new cultural contexts. This is crucial for the academic success and personal growth of international graduate students, as effective communication and cultural competence are integral to their integration into academic and professional communities. Understanding the motivations behind this research highlights the significance of equipping international students with the

skills and support necessary to thrive in diverse academic and professional environments.

### C. Psychological

Psychological motivations pertain to the examination of mental health, emotional well-being, and psychological factors that influence an international student's academic journey and overall adjustment to a new cultural and educational environment [28-29]. Researchers are motivated to understand the unique challenges faced by international students, particularly those in STEM fields, as they navigate cultural adaptation stressors and academic demands [17]. Here researcher's motivation is driven to recognize their diverse backgrounds and experiences thereby improving their academic integration and overall well-being within US universities [43]. This drive also stems from the ethical imperative to better understand and support international students' mental health and emotional well-being, especially during times of crisis such as the COVID-19 pandemic.

Researchers are motivated to explore the following sub-themes within institutional drivers: (i) Psychological Well-being and Stress Management [28-30], [38], [50]; (ii) Identity and Self-concept Development [28], [50]; and (iii) Resilience and Coping Strategies [29-30]. Psychological Well-being and Stress Management addresses the critical need to understand and manage stressors among international students to promote their mental wellness. This motivation is driven by the recognition of the unique challenges faced by international students, particularly in adapting to new cultural environments and coping with academic pressures. This is crucial to highlight the importance of implementing effective strategies and support mechanisms tailored to the specific needs of international students, considering the complexity of their experiences and the impact of stress on their overall well-being. Secondly, Identity and Self-concept Development stems from the understanding that how international students perceive themselves and their abilities significantly influences their academic engagement and performance. The authors seek to uncover insights into the development of positive self-perceptions among international students and the factors that contribute to their academic success. Finally, Resilience and Coping Strategies are driven by the desire to understand how international students navigate setbacks and challenges. This motivation aims to uncover the coping mechanisms employed by students to maintain focus on their academic and personal goals, especially within demanding STEM programs. By identifying effective coping strategies and fostering resilience, this motivation contributes to the development of support systems that enhance the well-being and success of international students in higher education.

## V. DISCUSSION AND CONCLUSIONS

Our study looks at why people research how international students in U.S. science and engineering programs adjust and succeed. We found three main reasons: Institutional challenges, like fitting into a new culture; Social/Cultural factors, like finding friends and adapting to new customs; and Psychological factors, like managing stress and building resilience. Researchers want to tackle issues like racism faced by non-English speaking students and understand how different cultures affect success. They also want to help specific groups, like

international students from Asia and a few other non-English speaking countries, who may need extra support. Through our findings, we observed a growing recognition of the importance of addressing the unique challenges faced by international graduate students, particularly in science and engineering fields. This includes issues related to cultural adaptation, academic integration, social support networks, and psychological well-being.

Drawing upon theoretical frameworks such as social cognitive theory and acculturation theory, our analysis unpacks these motivations and sheds light on the underlying factors shaping the educational experiences of this population. We see that the acculturation theory by Berry [19] can be used to understand institutions. We observe a variety of motivations driving work in this field, including challenges related to cultural and academic integration, institutional support, and professional development. These factors can be seen as institutional structures supporting acculturation processes. This prepares us to explore the acculturation process and understand how to better support students from diverse backgrounds. Researchers are driven to examine institutional services for acculturation and academic integration, as well as the challenges students encounter in accessing institutional support and resources. Understanding these dynamics helps improve support for international students' academic and cultural integration.

We see that acculturation theory, as proposed by Berry [19], suggests that international graduate students' experiences are influenced by their adaptation to new cultural environments. Within this framework, social and cultural dynamics, such as social support, sense of belonging, multicultural interactions, and community integration, play significant roles in students' acculturation processes. We observe a variety of motivations driving work in this field to understand how these dynamics impact students' academic engagement, identity formation, and overall well-being. By examining these factors through the lens of acculturation theory, researchers can develop strategies to create inclusive environments that facilitate students' social integration and support their academic success in STEM fields.

We find that social cognitive theory, as proposed by Bandura [18], provides a framework for understanding the psychological challenges faced by international graduate students. In the context of international graduate students, this theory implies that their psychological challenges are shaped by their self-efficacy beliefs, social support networks, and cultural adaptation processes. We observe a variety of motivations driving work in this field to explore how these factors interact to influence students' well-being and academic success. By understanding these dynamics, researchers are motivated to help the institutions develop interventions and support systems that enhance students' resilience, coping mechanisms, and identity development, ultimately fostering their personal and professional growth in STEM fields.

Through a comparative analysis of the findings, we see a trend towards greater awareness and emphasis on the holistic support of international graduate students in engineering disciplines. Research has learned a lot about international students' challenges, but we need to look deeply at issues like diversity. We should study factors like nationality, background,

and gender. Also, we need better ways to understand their experiences and see if support programs work. These limits show we need more research to help international students and improve support systems in universities.

This study examines why researchers study international graduate students in STEM programs across the US universities. Despite their vital role in diversifying academia and innovation, these students face hurdles in adapting to new academic and cultural environments, especially in the complex science and engineering programs. Recognizing the importance of this field and areas needing further investigation, this study answers the research question of what motivates current research on academic adjustments, support, and success among international graduate students in Science and Engineering programs within the United States. Through a review of 38 articles, we identify three key motivations: Institutional, Social/Cultural, and Psychological. These motivations drive efforts to address issues like racism, understand cultural influences on success, and promote resilience. We propose an integration of theories like acculturation and social cognitive theory, in the future to shed light on factors impacting international graduate students' success, guiding evidence-based policies for inclusivity and equity in academia. We also propose broader examinations of student diversity and improved research methodologies.

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