

# Report on Mental Health of International Graduate Student at Princeton University

Contributed by

Princeton International Graduate Student Learning Cohorts

Dan Mirea, Qiqi Yang, Yuzhou Bai, LuoJun Yang,  
Yeji Park, Neha Agarwal, Evelyn Wong, Yaqian Tang, Abrar Alshammari,  
Avery Barnett, Rose Guingrich, T Nang Pan

Sponsored by



the TigerWell Initiative



the GradFUTURES

Advised by

Anne Laurita (TigerWell)

Sonali Majumdar (GradFUTURES)

Eva Kubu (GradFUTURES)

April, 2023

## **CONTENT**

<b>1. INTRODUCTION</b>	<b>3</b>
1.1. Project Description, Populations of Interest, and Projected Impact	3
1.2. Contributors	3
1.3. Sponsors and Advisors	4
<b>2. LITERATURE REVIEW</b>	<b>4</b>
2.1. Graduate student mental health	5
2.1.1. How frequent are mental health concerns among graduate students?	5
2.1.2. Factors contributing to mental health issues in graduate students	5
2.1.3. Unmet needs for mental health services and contributing factors	6
2.1.4. Interim conclusion	7
2.2. International student mental health	7
2.2.1. What are the unique problems that international students face?	7
2.2.2. Larger unmet needs for mental health services among international students, and alternative coping strategies	8
2.2.3. Strategies to lessen mental health effects among international students	9
2.2.4. Interim conclusion	10
2.3. Summary	10
<b>3. DATA ANALYSIS</b>	<b>11</b>
3.1. Graduate Student Mental Health Survey	11
3.1.1. Confidence about future career prospects	11
3.1.2. Balancing research and teaching	12
3.1.3. Work-Life Balance	14
3.1.4. Support from the department and the university	14
3.1.5. Mental health Condition	15
3.2. UMatteer survey	15
3.2.1. Substance use	16
3.2.2. Interpersonal violence	16
3.2.3. Mental well-being	17
3.2.4. Bystander intervention	18
3.3. Office of Institutional Research Graduate Enrolled Survey	18
3.3.1. Academic Experience	18
3.3.2. Community Experience	20
3.3.3. Services Experience	21
3.4. Summary	22
<b>4. RECOMMENDATIONS</b>	<b>23</b>
4.1. Policy recommendations for improving international graduate students' career development	24
4.2. Policy recommendations for improving international graduate students' utilization of on-campus services that support their well-being	25
4.3. Recommendations for future survey and research in student population	25
<b>REFERENCES</b>	<b>26</b>

# 1. INTRODUCTION

## 1.1. Project Description, Populations of Interest, and Projected Impact

This report is the outcome of a 4-month collaborative research project that investigates how immigration-related processes potentially impact the mental health of international graduate students on Princeton campus.

According to the Davis International Center, international graduate students constitute nearly 50% of Princeton's graduate student body. As the COVID-19 pandemic brought unprecedented challenges on graduate students' mental health and wellbeing in general, international graduate students may have faced additional challenges due to their immigration status; for some, this could have been further exacerbated by a sense of isolation due to prolonged travel restrictions and convoluted geopolitical struggles.

With this project, we hope to establish an intellectual foundation for future efforts to fine tune our data collection, interdisciplinary research, internal policies, and mental health programming that serve to provide a campus-wide ecosystem of support for the mental well-being of international graduate students at Princeton. This report provides three primary deliverables:

- A literature review of key scholarly publications on this topic in other US higher ed institutions;
- A data landscape overview on international graduate students' mental well-being on campus based on recent Princeton survey results;
- A list of policy suggestions for better supporting the international graduate student body at Princeton, future practices of data collection and analysis, as well as mental health programming.

In addition to these tangible deliverables, we also hope for this project to spark cultural changes in both international graduate student body and university leaderships, administrators and faculty. For international graduate students, we hope to encourage international graduate students to openly acknowledge and discuss their experience with the immigration process, to form support groups, and to utilize relevant mental health resources. For university leaderships, we hope to raise awareness for the unique challenges international students face and the unmet needs of their mental health and well-being.

## 1.2. Contributors

This was the primary reason we chose to conduct this project on a highly collaborative and interdisciplinary basis. Our learning community consists of 12 graduate students at Princeton from all four academic divisions, each contributing 12-14 hours of their time to this project during the period of October 2022 to January 2023. The following colleagues are the primary authors for various parts of this text. They have also equally contributed to Policy Recommendations in Section 4. Dan Mirea, Yuzhou Bai, Qiqi Yang, and Luojun Yang wrote the summary and

introduction, revised and edited the entire report. Luojun Yang, Yuzhou Bai and Qiqi Yang acquired funding for this project.



### 1.3. Acknowledgements

The research and writing of this report is sponsored by the TigerWell Initiative and the GradFUTURES. In particular, we thank our staff advisors Sonali Majumdar (GradFUTURES), Anne Laurita (TigerWell), and Eva Kubu (GradFUTURES) for their thoughtful guidance and support.

In the process of research, we have obtained unpublished summaries of survey results from the Office of Institutional Research (IR), the University Health Services (UHS), and the research group on Graduate Student Mental Health. In particular, we thank Jed Marsh (OIR), Kathy Wagner (UHS), Abigail Novick Hoskin (recent PSY Ph.D. graduate) for their support on our data analysis.

We also thank Elana Broch (PU library) for her guidance on finding relevant scholarly literature.

## 2. LITERATURE REVIEW

We reviewed scholarly literature on the two larger demographic groups that international graduate students belong to, in order to provide insights into their intersectional experience. Section 2.1 focuses on the general mental health of graduate students, whereas section 2.2 examines the mental health of international students. This review provides a solid knowledge base and starting point for our campus community to acknowledge and reflect on the unique challenges of being an international graduate student. It also cites recommendations from these scholarly works, which highlight the importance of providing effective mental health support and robust mental health programming through equitable resource allocation. We hope these recommendations will help promote the mental wellbeing of this subset of Princeton's graduate student population.

### 2.1. Graduate student mental health

Rose Guingrich

Graduate student mental health is a pressing issue across the globe. Rising rates of mental health issues among graduate students has caused concern, yet university policy lags behind in response. According to research on graduate student mental health, there are a variety of structural and individual factors that contribute to these trends, including the culture of academia, advisor-advisee relationships, work-life balance, and discrimination. Each of these factors contributes to mental health issues, which are exacerbated by students' inability to access mental health tools and other forms of support within their respective institutions.

#### ***2.1.1. How frequent are mental health concerns among graduate students?***

Compared to both the general population and undergraduate students, studies show that graduate students experience mental health issues on a larger scale. In general, graduate students' likelihood of experiencing depression and anxiety is more than six times that of the population. Nearly half of graduate students have moderate to severe anxiety, versus only 6% of the general population (Evans et al., 2018). Wyatt and Oswalt (2013) found that nearly a quarter of economics PhDs experience three times the population average in moderate to severe depression and anxiety. These troubling levels of depression and anxiety contribute to even more troubling outcomes: 11% of graduate students reported having suicidal ideation within a two-week period (Wyatt and Oswalt, 2013). Of these numbers, marginalized groups experience the most stress on their mental health (Evans et al., 2018; Posselt, 2021). Transgender and female students experience 9-21% more depression and anxiety than male students, of whom 34-35% experience anxiety and depression (Evans et al., 2018).

#### ***2.1.2. Factors contributing to mental health issues in graduate students***

Many factors contribute to the graduate student mental health crisis. Some of these are quite common and expected in higher education, such as the workload and work hours in a PhD, financial instability of being a student, lack of support, and uncertainty about the future of one's career (Mackie & Bates, 2019). However, other factors that contribute to negative graduate student mental health are more overarching, structural pressures. Overwhelmingly, graduate

students' mental health is most impacted by the **problematic culture of academia, negative advisor-advisee relationships, poor work-life balance, and discrimination.**

1. **Problematic culture of academia.** The structure of academia causes issues for graduate students (Bekkouche, Schmid, & Carliner, 2022; Mackie & Bates, 2019). According to Bekkouche, Schmid, & Carliner (2022), there are four structures of academia that contribute to systemic stress in graduate students. First, expectations, norms, exclusivity, and criticism of academia breeds systemic stress in graduate students. Second, how functional the department is and its general atmosphere contribute to students' ability to change the status quo or seek help. Third, the lab and cohort system can foster competition and negative advising relationships. Lastly, the socioeconomic system of academia contributes to systemic graduate student stress: graduate study does not have a collective purpose. The mission and purpose of graduate education is not agreed upon, and students can feel lost pursuing a difficult degree without a sufficient baseline application that is collectively known and consistent.

2. **Negative advisor-advisee relationships** appear to be the frontrunner in contributing to graduate student mental health issues (Allen et al., 2022; Woolston, 2017). These relationships are central to the success of PhD students, and due to the structure and culture of academia itself, the worst of these relationships are marked by high-pressure, hierarchical dynamics and discrimination. Most of the graduate students who experience depression and anxiety indicate they do not receive adequate support from their advisor (Evans et al., 2018).

3. **Poor work-life balance.** Academia is hierarchical, with graduate students operating low on the totem pole in terms of status, but not in terms of workload contributions. Graduate students work for low pay, yet are expected to work more than regular work hours. The majority of graduate students experiencing depression and anxiety indicate they have an unhealthy work-life balance (Evans et al., 2018).

4. **Discrimination.** Students who experience discrimination, combined with being in an environment that feels competitive rather than supportive, are about two to three times more likely to experience anxiety and depression (Posselt, 2021). Gender and racial discrimination are the most prevalent, with 39% and 33% of students surveyed by *Nature*, respectively, reporting such misconduct during their PhD. Of these students experiencing discrimination, they report that these offenses come primarily from their advisor (Woolston, 2019).

### **2.1.3. Unmet needs for mental health services and contributing factors**

Despite the high rates of mental health concerns among graduate students, there are substantial unmet needs for mental health services (Hyun et al., 2006; Furr et al., 2001). For example, a study surveying graduate students in a large university in Western USA found that "...approximately 46% of graduate students reported significant emotional distress, and 50% reported that they had considered seeking counseling. Yet only 31% of respondents utilized counseling services." (Hyun et al., 2006). The unmet needs for services are also shown in a study on undergraduate and graduate students attending a large Mid-western public university that "only 36% of students who screened positive for major depression (but no anxiety disorder) received either medication or therapy in the last year" (Eisenberg et al., 2007).

Researchers attribute the causes of these unmet needs to reduced help-seeking behaviors and low access to mental health care and services. Previous studies show commonly reported



reasons for not receiving services are a lack of perceived need and the belief that stress is normal in school (Eisenberg et al., 2007; Givens & Tjia, 2002). These reasons are related to the common belief that “my issues are not serious enough”, which is also commonly reported by Princeton graduate students according to the longitudinal Princeton Graduate Student Mental Health Survey. Another reason for not seeking help is being unaware of or unfamiliar with service options (Eisenberg et al., 2007), which speaks to the frequent lack of effort university mental health services put into reaching graduate students.


These reasons disproportionately affect international students (Aubrey, 1991; Zhang & Dixon, 2003) and Asian and African American students (Cheng, Leong, & Geist, 1993; Lau & Nolan, 2000; Thompson, Bazile, & Akbar, 2004), because of cultural or language barriers and demographic or cultural commonality with mental health service providers. For example, Hyun et al. (2006) reported in their survey that international graduate students are significantly less likely than domestic graduate students to utilize counseling services. We will further discuss this part in Section 2.2.

#### **2.1.4. Interim conclusion**

In sum, graduate students experience higher levels of depression and anxiety than the general population. The factors that contribute the most to graduate students' mental health issues are the culture of academia, the relationship between students and their advisors, work-life imbalance, and discrimination. However, graduate students have substantial unmet needs for mental health services and care. This might be related to their own perceived need for help and/or their access to local mental health services. International students might have even larger unmet needs than domestic students for mental health services.

## **2.2. International student mental health**

Avery Barnett :  Graduate Student Mental Health  Literature review master doc

T Pan :  Presentation-T Nang Pan.pptx

### **2.2.1. What are the unique problems that international students face?**

Overarchingly, International students face similar issues to domestic students when entering higher education. These issues include 1) anxiety related to the unknown, 2) navigating new experiences in a university or college setting, and 3) the academic and financial pressures. Nonetheless, international students often face additional stressors that can compound or worsen their mental health (Prieto-Welch, 2016). There are several sources of stress that international students face uniquely or disproportionately:

- Language barriers
- Unfamiliarity with the education system
- Loss of familial and social networks
- Cultural adjustment and misunderstandings
- Racial discrimination or cultural isolation

These factors cause students to feel isolated and lost in their new social environment and academic system. Furthermore, some international students may feel pressured by studying a specific area due to being on scholarship or funded by a government, but then realizing that their interests are more than what they came to the host country to study - leading to a sense of conflict and impasse (Prieto-Welch, 2016). Moreover, international students face more financial stress due to the lack of scholarship, grant, and loan opportunities available to them (Hyun et al., 2007).

Similarly, a study conducted by McLachlan and Justice (2009), used the terms “transition shock” and “change overload” to categorize the problems international students faced as they transitioned to student life in the US. Transition shock is termed as “the transition of encountering a different culture as a result of moving to a different country or to a different region within the same country.” Change overload is defined as follows “human beings make sense of the world and their lives by following routines and taking familiar things for granted, but during an international move, there are no comforting routines. Everything changes at once.” The change overload consisted of the following: weather differences, food differences, academic and social differences, which, compiled with loneliness, homesickness, pressure to perform, and language isolation, “put them at risk for adjustment issues, and health problems.”

Nonetheless, **acculturation** is important for the process of adjustment which is the process by which individuals’ behavior, values, beliefs, and cultural identity change as a result of coming in contact with others from a different culture. However, the factors mentioned above can lead to **adjustment stress** which causes issues such as physical complaints, cognitive fatigue, cultural confusion, and isolation. The ease of acculturation can be connected to the **value differences** between the host country and the home country of the student. When the host country is individualistic, students from more collectivist cultures have lower levels of adaptation, more dissatisfaction and higher levels of anxiety than students from individualistic societies. This is highlighted by the fact that Europeans felt less stress than Asian, African and Latin American students when studying in the United States (Prieto-Welch, 2016).

In addition, students who leave their families behind often suffer more emotional turmoil and the guilt associated with feeling that they abandoned their families at home. Oftentimes, these students are driven by personal ambition and the hope that their studies will allow them to provide a better future for themselves and their families (Harvey et al, 2017).

International students face a plethora of issues while studying abroad which is compounded by their individual cultures and personal circumstances. Nonetheless, it is possible to improve the acculturation process for international students through proper university policies and cultural training across the university.



### ***2.2.2. Larger unmet needs for mental health services among international students, and alternative coping strategies***

Despite the potential higher burdens of mental health issues among international students due to the unique challenges, they are less likely to utilize the mental health services. A survey in graduate student population at a large western university shows even though international students reported not significantly different mental health needs, they are significantly less likely to utilize on- and off-campus counseling services (Hyun et al. 2007). Lower use of mental health resources among international students than domestic students was also reported in Prieto-Welch (2016). Possible barriers for international students seeking counseling include culture stigma against the use of mental health services (Aubrey, 1991; Zhang & Dixon, 2003), less acculturation to western cultural norms (Aubrey, 1991; Zhang & Dixon, 2003), less knowledge of on-campus counseling services (Hyun et al. 2007), language barriers and less commonality with mental health service providers (Cheng, Leong, & Geist, 1993; Lau & Nolan, 2000; Thompson, Bazile, & Akbar, 2004). Prieto-Welch (2016) also pointed out that the concept of mental health for international students may be different than what is being offered in the United States. Furthermore, pre-existing stigmas are compounded by language barriers and cultural misunderstandings and ignorance between the students and mental health staff.

International students have alternative strategies to cope with their mental health. For example, concealing their concerns from their family due to fear of loss of face and/or the stigma within their culture (Bradley, 2000). Students also cope by seeking refuge with peers from similar backgrounds where they feel understood and through their own personal ambition of completing their education considering that for many students their families had to make sacrifices for them to pursue their education (Bradley, 2000, Harvey et al, 2017). A study surveying international graduate students from China, Taiwan and South Korea found out that students facing more academic, environmental and family stress before were associated with **maladaptive coping skills**: avoidance and distancing (Yang, 2010). East Asian graduate students “tended to use more maladaptive coping skills which are the common coping strategies in their collectivist cultures, and deemed effective in their cultures.” (Yang, 2010) However, this alternative strategy is not good for mental health. The study also shows the graduate students with more maladaptive coping skills reported higher levels of stress (Yang, 2010).

### ***2.2.3. Strategies to lessen mental health effects among international students***

To lessen the barriers to mental health access among international students, researchers have suggested that institutions implement some practices. These practices involve (Hyun et al., 2007, Prieto-Welch, 2016)

- educating faculty and staff members about mental health issues while fostering open dialogue about the challenges associated with a student’s program.
- modifying mental health services to better address financial stress and to reduce the conflict between values embodied in therapy and the cultural values of those seeking treatment.
- acknowledging and addressing prejudice, discrimination and microaggressions within the school environment.

- faculty and staff having a more active, welcoming and directive approach to international students, alongside mindfulness about language proficiency and differences in communication.
- student-led awareness training, which is geared towards basic skills training in specific aspects of social preferences and cultural idiosyncrasies within the host country (Prieto-Welch, 2016; Wei & Bunjun, 2021). It could provide social networks as alternative spaces of belonging which could decrease isolation (Prieto-Welch, 2016; Wei & Bunjun, 2021).

We further discuss policy suggestions focusing on Princeton University graduate student population in Section 4.

#### **2.2.4. Interim conclusion**

International students typically face additional challenges as a result of the linguistic, social, and cultural transitions they go through to study and live in a foreign environment. Studies have shown that the multitudes of changes likely burden the mental wellbeing of international students, on top of the other types of stress commonly experienced by all students. In spite of this, they are also less likely to utilize mental health resources, due to cultural differences. To fill this gap, universities should take a more culturally sensitive approach to dedicate mental health resources and other programs to help international students address the unique challenges they face.

### **2.3. Summary**

In the above literature review section, we have found that graduate students are more likely to experience depression and anxiety due to academic culture, advisor-advisee power dynamic, work-life imbalance, and discrimination. International students, who are similarly prone to develop mental health issues, face a different set of problems, including language barrier, cultural differences, difficulty in adjustment, and lack of access to financial and familial support.

Through summarizing their behavior patterns and the common reasons for these patterns, we identify the following similarities across these two demographics:

- Both groups are plagued by mental health issues due to structural challenges;
- Both groups are less likely to seek out and utilize mental health resources.

From this review, we infer that, as international graduate students exist on the intersection of these two demographics, they potentially face exacerbated mental health issues due to the compound of structural issues experienced by the two groups, as well as their shared hesitancy to access mental health resources. Notably, there is a potential larger unmet needs for mental health services among international students, as they are seen even less likely to utilize the services than domestic students, and they have more potential barriers to do so.

While there is no easy and immediate solution to many of the structural issues that international graduate students face on a daily basis, we believe that it is important for the Princeton community to first acknowledge the unique challenges for our international graduate students

population to achieve mental wellbeing. As these studies have shown, this is a universal problem that exists across many university campuses; but as a world leader in graduate education, Princeton has the opportunity to take leadership in developing innovative approaches and programs to address this issue. Such an initiative may require the allocation of resources that prioritizes interdisciplinary research that advances our knowledge on this matter, and the establishment of programming that remedies the struggles its international graduate student population is faced with.

### 3. DATA ANALYSIS

Focusing on Princeton international graduate students, we analyze data from three surveys: Graduate Student Mental Health Survey, U Matter Survey, Office of Institutional Research Graduate Enrolled Survey, using statistical methods.

#### 3.1. Graduate Student Mental Health Survey

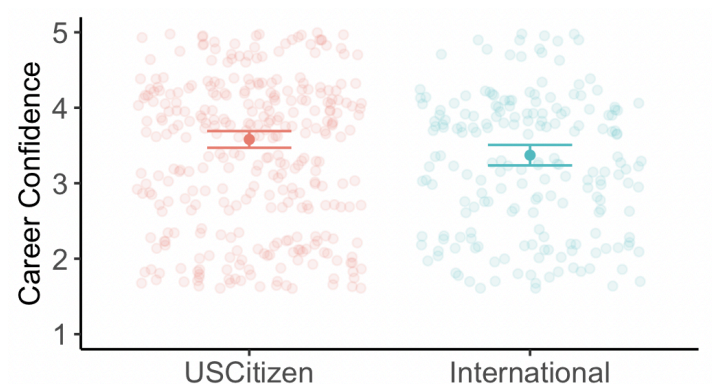
Yeji Park Yaqian Tang

Graduate Student Mental Health (GSMH) study is an annual survey distributed to all enrolled graduate students at Princeton University from 2019 to present. For the present report, Fall 2021 data was used. The data consisted of 749 graduate students (31% international, 69% non-international), and included students across different academic fields (26% natural sciences, 20% social sciences, 20% engineering, 19% humanities, 15% unknown) and year of study (27% first-years, 19% second-years, 14% third-years, 15% fourth-years, 12% fifth-years, 13% sixth-years). Students, however, were allowed to skip any questions, leaving slightly fewer participants included in the analyses below (ranged from  $n=501$  to 616).

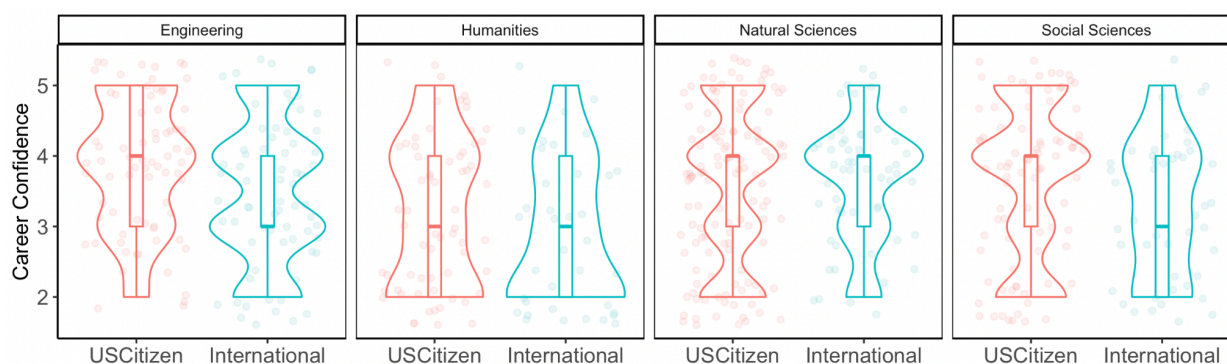
##### 3.1.1. Confidence about future career prospects

International students often face barriers into the workforce due to visa restrictions (McFadden & Seedorff, 2017), which may lead to experiencing greater concerns about their career prospects. Participants reported how confident they feel about their future career prospects on a scale of 1 (*Strongly disagree*) to 5 (*Strongly agree*). **Compared to non-international students, international students reported significantly lower confidence about their career prospects** ( $b=-0.23$ , 95% *CI* [-0.40, -0.05],  $p=0.012$ ; Fig. 1), even after adjusting for academic fields and year of study.

Next, to examine whether this trend differed by academic fields, we added an interaction term between academic field and international status in the model. International students in engineering reported significantly lower confidence about their career prospects than their non-international peers ( $b=-0.41$ , 95% *CI* [-0.74, -0.08],  $p=0.015$ ); a similar trend was observed for social sciences ( $b=-0.35$ , 95% *CI* [-0.71, 0.01],  $p=0.059$ ). No significant difference was found between international and non-international students in humanities and natural sciences. Graduate students in humanities in general reported lower confidence in career prospects than the other three academic divisions, including those who were international (Fig. 2).



**Figure 1.** Comparison of career confidence between international and US citizen graduate students at Princeton.



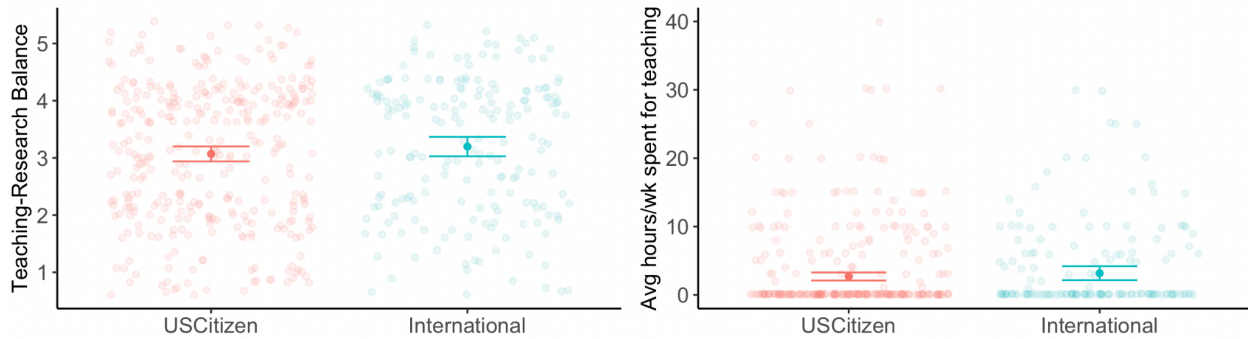
**Figure 2.** Comparison of career confidence between international and US citizen graduate students at Princeton, by academic divisions.

### 3.1.2. *Balancing research and teaching*

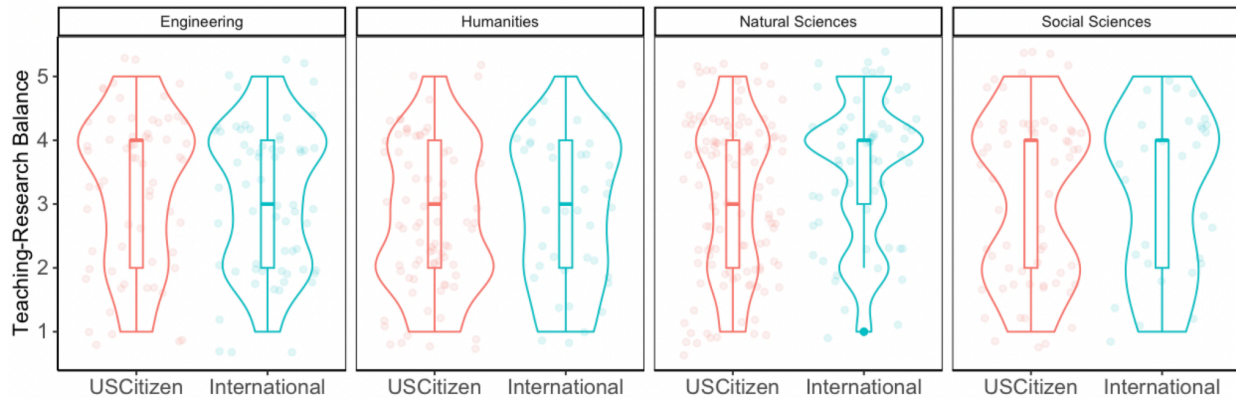
International students are not eligible for many scholarship or fellowship opportunities (e.g., National Science Foundation, Ford Foundation) that can be used to reduce teaching responsibilities. As such, we hypothesize that international students may experience greater challenges balancing their research and teaching activities. Participants of this survey reported whether they feel they are able to balance their research activities with required courses and teaching commitments on a scale of 1 (*Strongly disagree*) to 5 (*Strongly agree*). Additionally, they reported the number of hours per week they spend on teaching and grading in the Fall and Spring semesters, which were averaged to create a composite measure. Similarly to above, we then fit linear regression models with international status as a key predictor variable, and academic fields and year of study as covariates.

Contrary to our hypothesis, **we did not find evidence that international students report having greater difficulty balancing research and teaching ( $b=0.12$ , 95% CI  $[-0.10, 0.34]$ ,  $p=0.271$ ) nor spend more time on teaching and grading ( $b=0.60$ , 95% CI  $[-0.49, 1.69]$ ,  $p=0.280$ ; see Fig. 3).**

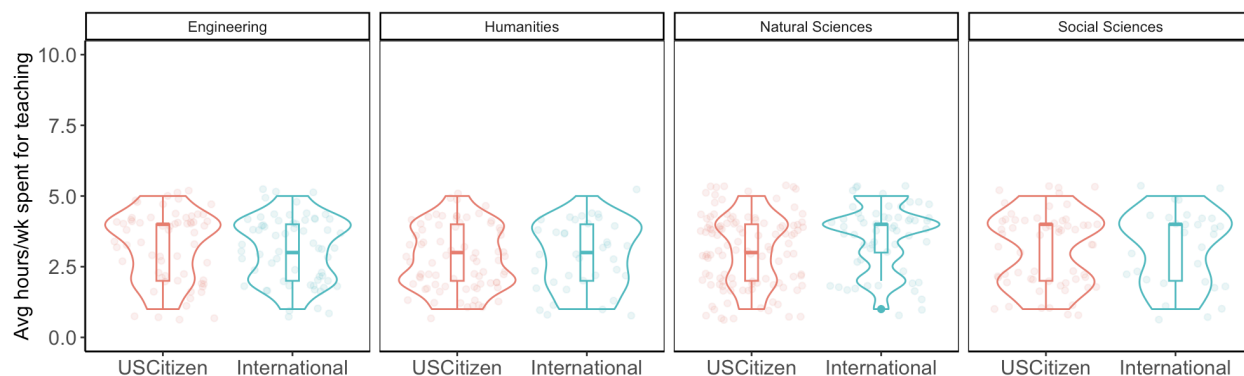
Examining the subgroup effects, the same trend was observed among students in engineering, humanities, and social sciences. Interestingly, **international students in natural sciences reported somewhat better research-teaching balance** ( $b=0.36$ , 95% CI  $[-0.03, 0.74]$ ,  $p=0.067$ ; Fig. 4) even though they objectively spent more time on teaching and grading ( $b=2.05$ , 95% CI  $[0.32, 3.78]$ ,  $p=0.020$ ; Fig. 5) than their non-international peers. While more research is needed to understand the phenomenon, one possibility is that international students in these fields perhaps experience culture stigma about reporting feeling overwhelmed with teaching responsibilities. Other possible explanations include that international students may have lower standards for what constitutes a good research-teaching balance for cultural reasons, and that they come to develop better time management skills from being more heavily involved in teaching duties. These possibilities are acknowledged by previous studies as we discussed in Section 2.1.3 and 2.2.2.



**Fig 3.** Comparison of teaching load between international and US citizen graduate students at Princeton. *Left*: reported ease in balancing teaching and research, *right*: average time spent for teaching.



**Fig 4.** Comparison of reported ease in balancing teaching and research between international and US citizen graduate students at Princeton, by academic divisions.

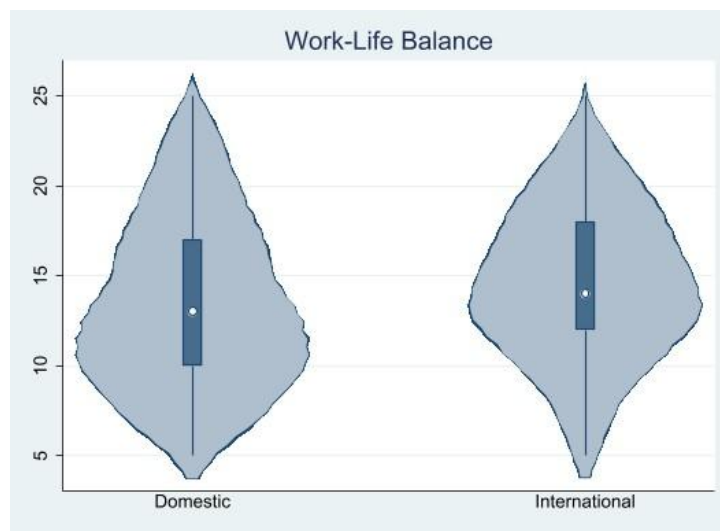


**Fig 5.** Comparison of average time spent on teaching between international and US citizen graduate students at Princeton, by academic divisions.

### 3.1.3. Work-Life Balance

Based on the “work-life balance” section of the GSMH survey (5 questions in total), we devised a composite score for the reported work-life balance. In particular, if higher endorsement of the statement indicates better work-life balance, we score the responses from 1 (corresponding to “strongly disagree”) to 5 (corresponding to “strongly agree”); otherwise, we reverse the scale and score the responses from 5 (“strongly disagree”) to 1 (“strongly agree”). Then, we add the score for the five questions together to obtain a work-life balance composite score.

Our results show that international students report **better work-life balance** compared to domestic students, even after controlling by class-year and academic field ( $t=2.59, p=0.01, CI=[0.24, 1.75]$ ). Also, as shown by the violin chart, international students are less likely to report poor work-life balance (a composite score less than 10).



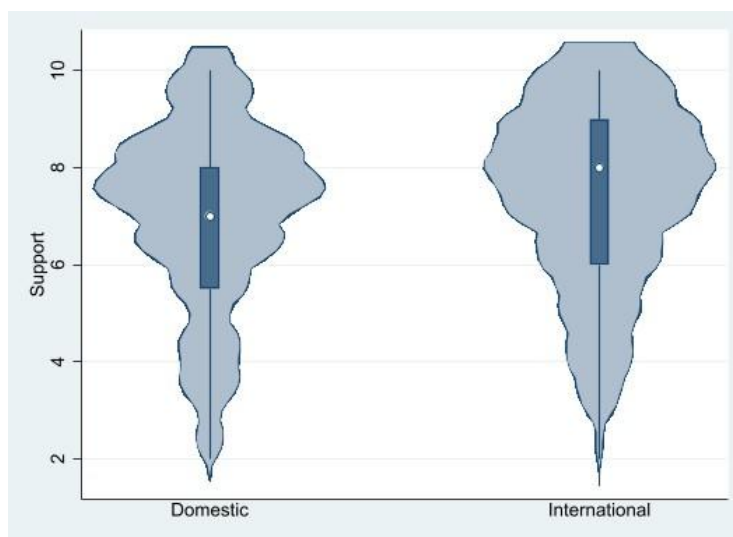
**Figure 6.** Comparison of Work-Life Balance between International and domestic graduate students at Princeton.



We need to note that **these results only quantify the subjective perception** of work-life balance and not an objective measurement (such as how many hours a student typically spends in the activities described in the questions). Therefore, it might be possible that international students do not consider longer working hours as worse work-life balance because of cultural differences and/or selection biases in the admission process leading to selecting international graduate students with higher intrinsic resilience. The possibility is acknowledged by previous studies as we discussed in Section 2.1.3 and 2.2.2.

### 3.1.4. Support from the department and the university

International students typically need additional support from the department and the university for traveling, conducting internship, and other activities because of their visa status. In line with this, we also investigated whether international students feel less supported due to these complications. Similarly, we assign a composite score by adding up both of the questions on a scale from 1 (strongly agree) to 5 (strongly disagree). Contrary to our hypothesis, international students report feeling **more supported by the school and the university**, after controlling for class year and academic field ( $t=3.14$ ,  $p=0.002$ ,  $CI=[0.2,0.87]$ ). Similar to our findings for research-teaching balance and general work-life balance, this result reflects their subjective experience, which may have been the result of cultural differences or selection biases.

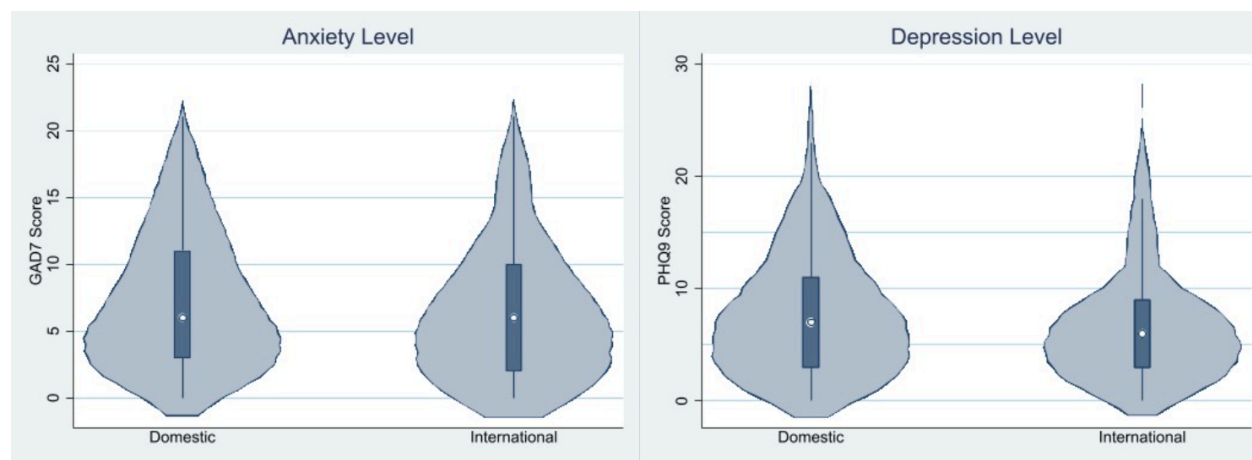


**Figure 7.** Comparison of perceived level of support from the university and the department between International and domestic graduate students at Princeton.

### 3.1.5. Mental health Condition

Finally, we examine the depression and anxiety levels of international students through the Generalized Anxiety Disorder 7 scale ([GAD7](#)) and Patient Health Questionnaire 9 ([PHQ9](#)). A PHQ-9 score total of 0-4 points equals no or minimal depression, 5-9 points indicates mild depression, 10-14 points indicates moderate depression, 15-19 points indicates moderately severe depression, and 20 or more points indicates severe depression. A GAD-7 score total of

0-4 points equals minimal anxiety, scoring between 5-9 points indicates mild anxiety, 10-14 points indicates moderate anxiety, and greater than 15 indicates severe anxiety.



**Figure 8.** Comparison of anxiety level (left) and depression level (right) between International and domestic graduate students at Princeton.

The median scores of both international and domestic students indicate mild levels of depression and anxiety. However, compared to domestic students, international students report **lower levels of depression** ( $t=-2.57$ ,  $p=0.01$ ,  $CI=[-2.01,-0.27]$ ) **and anxiety** ( $t=-2.76$ ,  $p=0.006$ ,  $CI=[-2.1,-0.35]$ ), even after controlling by academic field and class year.

### 3.2. U Matter survey

Evelyn Wong [alshammari@princeton.edu](mailto:alshammari@princeton.edu)

Princeton's U Matter, launched in September 2015, is a comprehensive prevention initiative with a skill-based communication campaign, focused on promoting skills in four aspects: being an effective bystander, making healthy choices, caring for others, and taking action. It was created to provide a framework that links prevention efforts for significant health and safety issues across campus. Under the U Matter brand, Princeton University students, faculty and staff can more easily find resources, learn skills and utilize them to intervene effectively as a bystander and make healthy choices. Every year, U Matter conducts a survey across undergraduate and graduate students to assess four aspects of their mission: 1) being an effective bystander, 2) making healthy choices, 3) caring for others, and 4) taking action.

For this report, data from the 2022 survey was used. The data consisted of 402 graduate students (39% international, 56% non-international, 5% missing), and included students across different academic courses of study (88% PhD, 11% Master's) and year of study (26% first-years, 20% second-years, 19% third-years, 16% fourth-years, 19% fifth-years, 19% sixth-years). Ages ranged from 21 to 47, with the middle 50% between 24 and 28 years old. 44% identified as male, 50% as female, 2% as genderqueer/gender non-conforming, with the remainder of responses missing.



T-tests were conducted to assess differences between international and non-international graduate students. The survey measures several dimensions of 1) personal well-being, 2) community affiliation and 3) bystander intervention. In this report we will focus on the areas where there was a statistically significant difference in answers from international graduate students when compared to domestic graduate students.

### **3.2.1. Substance use**

International students reported a **lower frequency of alcohol consumption** on average than domestic students (3.16 vs 3.6, with 3 indicating drinking alcohol on 1 to 2 days in the past month, and 4 indicating drinking on 3 to 5 days in the past month;  $p < 0.05$ ). International students also reported on average **lower cannabis consumption** in the past 30 days (1.37 vs 1.74, with 1 indicating never used and 2 indicating have used but not in the past 30 days;  $p < 0.01$ ). There were very few ( $< 5$ ) students reporting that they were in recovery from substance abuse in the general sample.

International students were **more likely to encourage their peers to stop drinking** ( $p < 0.1$ ), and **more likely to encourage their peers to drink less** ( $p < 0.01$ ). There was no difference between international and non-international students in whether they personally felt pressure to drink, but international students were more likely to disagree that there is social pressure to drink (1% significance level). International students were also more likely to agree that it is easy to make friends without alcohol ( $p < 0.01$ ).

### **3.2.2. Interpersonal violence**

International students answered very similarly to non-international students on most questions. However, international students were more likely to say that they would speak up to someone who referred to their partner as an object ( $p < 0.01$ ).

### **3.2.3. Mental well-being**

Many answers for international students in this section were statistically significant and different from non-international students. In general, international students' answers tended to be **slightly less self-critical, more forgiving, and display more resilience**.

Note: In the questions below, a score of 13 indicates 'half of the time', and a score of 12 indicates 'most of the time'.

Question	Domestic student mean score	International student mean score	P-values
Being understanding of the parts of myself I don't like	13.25	12.89	0.01
Trying to take a balanced view	12.84	12.51	0.01

when something painful happens			
When I'm feeling down, I tend to feel like most other people are probably happier than I am	12.85	13.13	0.1
Try to see my failings as part of the human condition	13.13	12.87	0.1
I give myself the caring and tenderness I need	13.38	13.13	0.05
When I'm feeling down, I tend to obsess and fixate on everything that's wrong	12.39	12.91	0.01
When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people	13.43	13.06	0.01
I'm disapproving and judgmental about my own flaws and inadequacies	12.43	12.84	0.01
I'm intolerant and impatient towards those aspects of my personality I don't like	12.95	13.39	0.01

International students also reported being **slightly less likely to bounce back quickly after hard times** (13.5 vs 13.16;  $p < 0.1$ ). On a scale of 1 to 4, with 1 being very likely and 4 being very unlikely, international students are **less likely to exaggerate the importance of bad things** (2.08 vs 2.34;  $p < 0.01$ ), and **more capable of being able to change their thinking to calm down** (2.34 vs 2.14;  $p < 0.01$ ).

### 3.2.4. Bystander intervention

The answers in this section could not be reliably interpreted due to the coding methods, which placed answers from a scale of 1 (highly disagree) to 5 (highly agree), and 7 (not sure). Hence, when there is a statistically significant difference of means such as 6.5 vs 6.3, it is unclear whether this is due to a higher level of agreement with the statement (more 5s), or higher level of uncertainty.

The questions on whether a student has witnessed or intervened in situations have a similar coding uncertainty, with 'intervening every time' (5) next to 'not witnessed this year' (6). Hence, it is difficult to draw conclusions from a high score, as students may be very active interventionists or simply not encountered the situations described. **We advise that the U\_Matter office change its coding convention for this section**, perhaps separately noting the answers for 'not

witnessed this year' as it is categorically different from the rest, and putting 'not sure' in the middle of disagree-agree Likert scales, rather than higher than agree.

Contrary to our hypothesis, we do not see international students reporting worse mental health than domestic students. On the contrary, we find that on measures of mental well-being, international students tend to be **slightly less self-critical, more forgiving, and display more resilience**. International students also **report lower alcohol and cannabis consumption**. The difference between the literature and these results may be linked to the factors discussed in 2.2.1 and 2.2.2, where it is found that international students often face cultural stigma around mental health issues and may wish to paint a brighter picture of their circumstances than is the case.

### 3.3. Office of Institutional Research Graduate Enrolled Survey

Neha Agarwal

The present analysis is based on the latest round of the **Graduate Enrolled Survey (GES)** conducted in 2022. The GES is a voluntary survey that the Office of Institutional Research (OIR) offers to all enrolled graduate students to obtain information on the students' experience at Princeton. The interview has been conducted in 2-4 year intervals for the last 12 years. The 2022 round reports information from 3,126 students. Each question is optional and the analysis utilizes all the non-missing values, ranging between 299-1,565 depending on the question, for the specific questions of interest. For each question, we compared the responses of international and domestic students utilizing the Pearson Chi-square and Fisher's exact tests. Their response to the question, *Are you a U.S. citizen or permanent resident (hold a permanent Visa)?* served as an indication of their international (*no*) or domestic (*yes*) status.

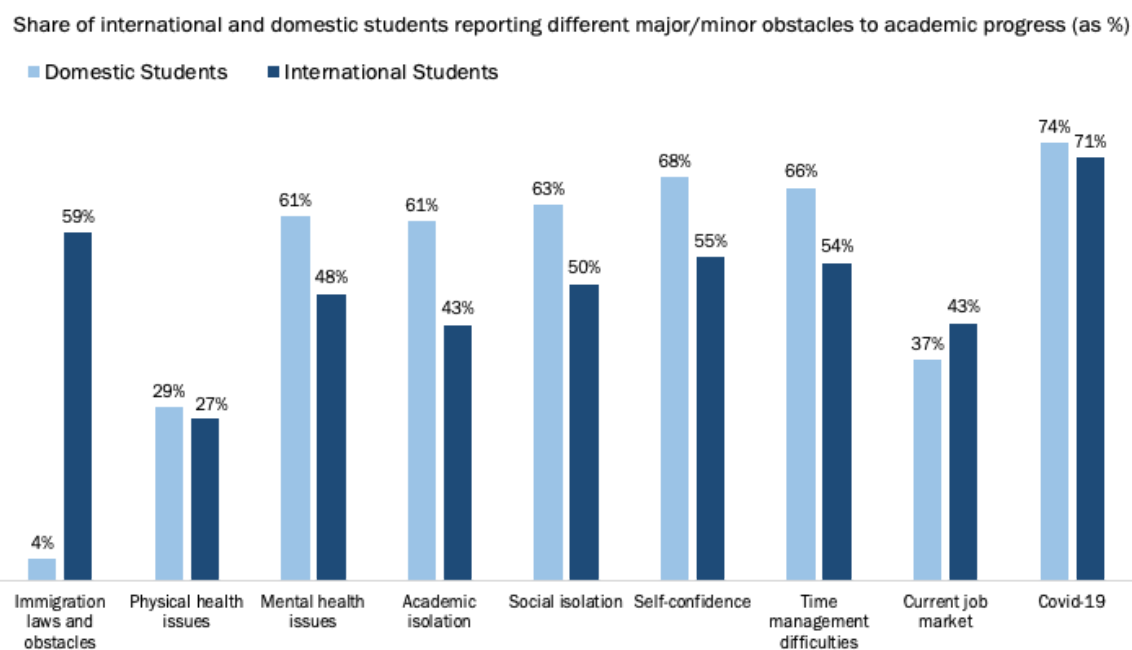
#### 3.3.1. Academic Experience

**International students reported greater satisfaction with their overall experience, academic experience and student life experience at Princeton compared to domestic students ( $p < 0.01$ ).** International students found the level of support from faculty in their department higher and more effective than the domestic students do ( $p < 0.01$ ). The former group also found the graduate program orientation and early research opportunities (such as laboratory rotations) more effective on average than the latter ( $p < 0.01$  and  $p < 0.05$  respectively). While a higher share of international students agreed or strongly agreed that *students are treated with respect by faculty*, their *"peers value their scholarship compared to domestic students"*, their *"own relationships and interactions with faculty are positive"*, and that they *"have the resources they need to succeed"*, the level is higher than 75% in both groups. **However, 44% of international students identified with the idea that they have to work harder than some of my peers to be perceived as a legitimate scholar, compared to 36% of domestic students who share the sentiment.**

Echoing the observation on their 'legitimacy as a scholar', **compared to domestic students, of which 78% agreed that their ideas had been taken seriously by other graduate students,**

**only 65.6% of international students had had a similar experience ( $p<0.01$ ).** While ~67% and 72% of international and domestic students, respectively, agreed that their ideas had been taken seriously by the faculty, the difference was statistically insignificant. Still, a higher share of international students, at 64%, felt comfortable expressing opposing views in their courses compared to 56% of domestic students ( $p<0.05$ ). **The overall favorable view that international students held of their academic experience at Princeton makes the role of immigration laws and regulations as an obstacle to academic progress especially stark - about 60% of international students considered immigration laws and regulations at least a minor obstacle to their academic progress in the year preceding the survey.** Academic and social isolation, a lack of self-confidence, and time management difficulties also serve as obstacles to academic progress for international students at high rates, but the shares of students reporting that they have faced such obstacles to academic progress in the last year are stunningly high across the graduate student community (Figure 9).

Perhaps as a result of their positive overall experience, international students are more likely to recommend Princeton to someone considering their field of study than domestic students. When asked, 61.5% of the international students responded with a “definitely”, while only 45.4% of domestic students offered a similar response ( $p<0.01$ ). But, their observations on the more quotidian aspects of the academic life relating to their perceived legitimacy as a scholar, immigration-related obstacles, isolation, and self-confidence would appear to attenuate the general optimism and would require addressing.



**Figure 9.** Share of international and domestic students reporting different major/minor obstacles to academic progress (as % of students).

### 3.3.2. Community Experience

Approximately 80% of international and domestic students alike agreed with the statement that students are respected regardless of their citizenship or country of origin. However, when asked

specifically about their perception of institutional fairness and equity, while 75% of international students agreed or strongly agreed that their program's procedures are fair and equitable to all, approximately 61% of domestic students similarly agreed ( $p < 0.01$ ). Relatedly, 83% of international students agreed with the idea that students are respected regardless of their 'race or ethnicity', but 74% of domestic students did ( $p < 0.01$ ). Similarly, a lesser share of the domestic students, at 75% and ~80% agreed that students are respected regardless of their 'sex, gender identity or gender expression' and 'sexual orientation' respectively; the share of international students who agreed was slightly higher on both counts ( $p < 0.01$  for both).

Despite a favourable overall view of the community, 14% and 16% of international and domestic students (no statistical difference) respectively still had experienced unwelcome comments, jokes, offensive remarks, or images directed at them based on their status, identity or background in the school year. About 10-11% of international students had felt themselves singled out, targeted for different or less favourable treatment, or excluded from full participation or marginalized based on their status, identity or background. Domestic students reported a slightly higher rate of having had similar experiences at 14%. Just as importantly, 17% of international students and 26% of domestic students had heard or observed unwelcome comments, jokes, offensive remarks, or images being directed at another person or people based on their status, identity or background ( $p < 0.01$ ).

Nonetheless, when asked about their views on the community at large, 81% of international students agreed with the idea that students in their program are collegial and 85% of domestic students similarly agreed ( $p < 0.01$ ). No statistically significant difference in whether students felt included in the informal networks in their program was observed across the two groups. Bolstering the observation, the majority of both groups, at 67% among international students and 64% among domestic students, claimed that they felt accepted as part of the campus community often or most of the time. Overall, approximately 76% of the international students agreed, at a higher rate than domestic students, that they can get what they need in the campus community and that the campus community helps them fulfill their needs.

The differences in the perception of the community by the international and domestic students is interesting to note. Though the majority of both groups hold a favorable opinion of the campus community, a higher share of domestic students expressed/reported encountering or experiencing undesirable experiences. The difference could arise due to several factors such as, (1) an actual difference in the rates at which international and domestic students experience undesirable and discriminatory behaviors, (2) cultural differences in how individuals across the two groups interpret and characterize the same set of experiences, and (3) sampling errors, among other factors. More detailed research could help develop a more precise understanding of the issues.

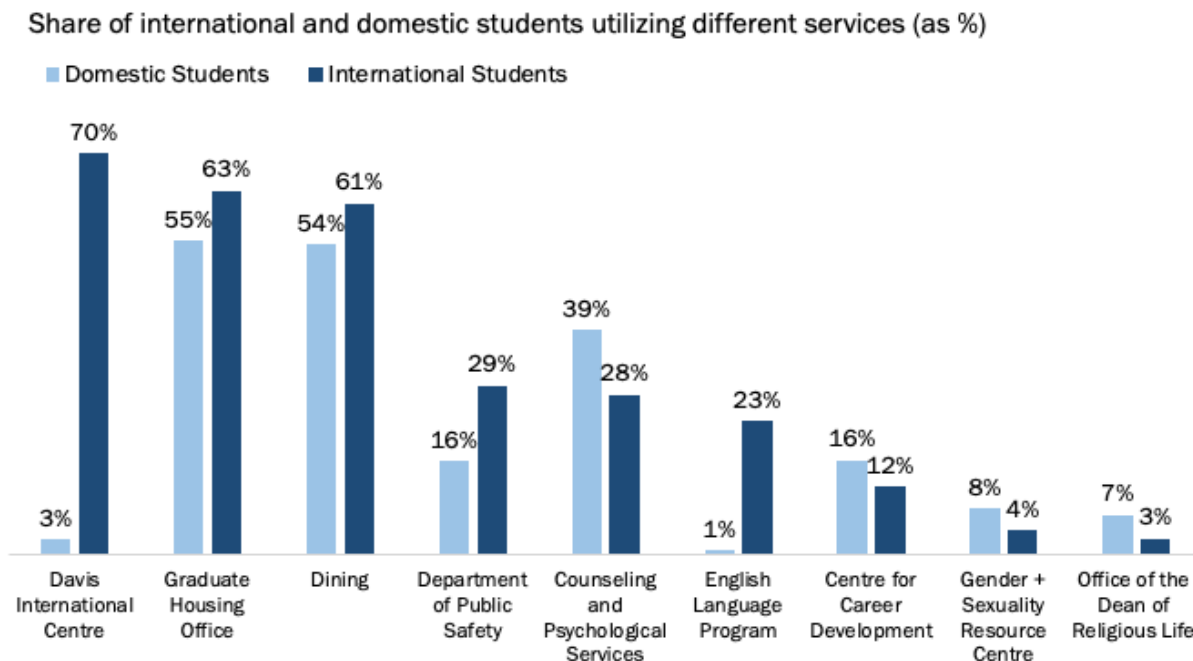
### **3.3.3. Utilization of On-Campus Services**

As expected, international students are more likely to utilize services of the Davis International Centre and the English Language Program than domestic students ( $p < 0.01$  for both); approximately 7 out of the 10 international students reported utilizing the Centre's services

(Figure 10). Similarly, international students are more likely to utilize services of the Graduate Housing Office, Dining, and the Department of Public Safety ( $p < 0.01$  for all).

**However, regarding mental health services, international students report a lower utilization of Counselling and Psychological Services at ~28% compared to 39% among domestic students ( $p < 0.01$ ).** They are also less likely to utilize services or participate in programs of the Gender + Sexuality Resource Centre compared to domestic students. However, even among domestic students, the rate of participation is less than 10% ( $p < 0.01$ ). In a similar vein, international students report lower utilization of the Office of the Dean of Religious Life compared to their domestic counterparts, but as with the Gender + Sexuality Resource Centre, the rate of engagement is less than 10% even among the latter ( $p < 0.01$ ). **The Centre for Career Development too witnesses higher utilization (16%) from domestic students compared to international students (12%) ( $p < 0.05$ ).**

No statistically significant difference (at  $p < 0.05$ ) was observed in the utilization of Program/Department Graduate Office, the McGraw Centre for Teaching and Learning, the Princeton Library System, Office of Disability Services, the AccessAbilityCentre, and the TigerTransit Service. The differential rates in the utilization of the different services and programs indicate parity in access to basic infrastructural and academic services. However, **when it comes to services that provide mental and social support, the lower utilization among international students requires further investigation.** Similarly, while the higher rate of utilization for programs and services such as the Davis International Centre and the English Language Program may be expected among international students, based on current data, it is unclear what issues inform the international students' higher utilization of the Graduate Housing Office and Department of Public Safety.



**Figure 10.** Share of international and domestic students utilizing different services (as % of students).

### 3.4. Summary

Based on three datasets collected through on-campus surveys for different purposes in 2021 and 2022, we found that, compared to domestic graduate students, international graduate students reported similar or better perceptions of their academic, interpersonal, or personal experience at Princeton. However, **they reported significantly lower confidence about their future career prospects**. In addition, international students were less confident about being recognized in their current research community and felt that they needed to work harder than some peers to be perceived as a legitimate scholar, and to make their ideas be taken seriously by other students.

**Despite their lower confidence in their career prospects**, which might affect their well-being, **international graduate students in Princeton utilize less services that support their mental health and career development compared to their domestic peers**, including Counseling and Psychological Services, Gender + Sexuality Resource Center, Office of the Dean of Religious Life, and Center for Career Development. In contrast, they report more utilization of services that assist basic needs, including Graduate Housing Office, Department of Public Safety and Dining, than their domestic peers. This reflects that international graduate students experience more challenges and do need more support on living; and it is hard to believe that someone who needs help on housing, food access and safety, would need less support on their well-being, mental health and career development.

Therefore, **we identify an unmet need for international graduate students in Princeton to support and help with mental health, well-being and career development.** Similar unmet need in other US universities is reported by existing scholarship, which shows international (graduate) students are less likely to seek help or utilize mental health services despite having more needs, compared to domestic students (see literature review section).

Regrettably, there are two things that our data and analyses have not been able to account for (1) changes of international graduate students' experience over time; (2) the impact of the COVID-19 pandemic on international graduate students' mental health (Xu et al., 2021). While we believe these topics are critical for us to develop a holistic understanding of the historical and current situation of international graduate students' mental health at Princeton, they have fallen out of the scope of this current project. We recognize this as a main weakness of our analysis, and we would like to encourage others to incorporate these angles into their future research projects.

## 4. RECOMMENDATIONS

We reviewed the literature on graduate and international student mental health and analyzed data from three recent surveys at Princeton which investigated mental health issues among domestic and international students. Here we propose our recommendations for improving international graduate students' career development, improving their utilization of on-campus services that support their well-being, and improving future surveys on better including international students.

The lack of attention and consideration on inclusion of international students in on-campus services may interfere with international students' utilization of on-campus services. The on-campus services alluded to in this discussion include community-building events, mental health care and career development support. For each type of event or interaction, there are barriers of cultural differences, language barriers, immigration/Visa challenges - these need to be considered in designing and improving the services to better include international graduate students. Despite the fact that almost half the population of graduate students at Princeton are international students, international students are not as 'visible' as they should be. The identity of being an international student is not often discussed or considered in community-building events and in service providers' focus on students' well-being. To improve international graduate students' participation in community-building events and help-seeking from the service providers on career development and mental health issues, we recommend the **university leadership and service providers should take the initiative to consider international students as an identity that bears unique challenges that international students may face.** On the other hand, international students embody experiences of being an isolated minority in many respects. The whole international student body consists of many different nationalities and ethnicities. Princeton University has numerous student organizations that are built upon ethnicity and national identity. Moreover, many international students could have intersectional identities with



other minority groups. Therefore, **we argue that the identity of being an international student should also be included and discussed on the university's diversity, equity and inclusion (DEI) agenda.** Accordingly, there should be DEI work that focuses on the identity and experience of being international students.

*Why is there a paradox that international students need more support for well-being and career development while their self-reporting is inconsistent and they report less utilization of on-campus services?* First, cultural differences may interfere with the self-reporting of subjective experiences. Existing literature show that international students are less likely to report mental health problems because of cultural stigma associated with admitting one's struggles and negative thoughts ("I should stay positive", "It's no big deal") or expressing one's dissatisfaction with the status quo ("I should be grateful"). They are also more likely to attribute challenges and problems to their incompetence ("I should work harder"). However, the extent to which cultural differences may interfere with the self-reporting of subjective experiences by international versus domestic graduate students at Princeton remains unexamined. We recommend that **when designing future surveys for the student population at Princeton, self-reporting biases due to the cultural differences of international students should be more comprehensively and carefully taken into account.**

Regardless of the paradox, our results also highlight the major challenge of Princeton international graduate students is their career development. This affects their self-esteem and belonging in Princeton research community. Despite we do not find lower performance in self-reporting mental health status between international graduate students and their domestic peers, it is possible this results from biased self reporting as we discussed above.

Focusing on the three major findings above, we list more specific recommendations in details below.

#### **4.1. Policy recommendations for improving international graduate students' career confidence**

- Our analysis shows (Figure 9, Section 3.3.1) immigration laws are major obstacles for international graduate students on campus. Therefore, we recommend the university to strength supports for Immigration laws and related concerns. Some specific recommendations include:
  - Supporting the international students' need for acquiring Curricular Practical Training (CPT) across departments, by making the application process of dissertation-related CPT open to the students, providing university-level CPT or ensuring all departments set up CPT courses.
  - Supporting the extension of STEM Optional Practical Training (OPT) for STEM graduate students of STEM programs.
  - Providing staff support for acquiring visa, Curricular Practical Training (CPT), and Optional Practical Training (OPT) via Davis International Center. In addition to current international student advisor support structure, we suggest the university

- to provide country-specific advisor support, because different countries have different situations in terms of applying for visa and travel.
  - Taking the initiative to educate the faculty, administrators and staffs across departments about the international students' need on acquiring visa, CPT and OPT and how they could support.
- Our analysis shows the financial issues are major obstacles of international students in academic progress (Insert results, figures). We recommend:
  - The university leadership actively research and provide funding availability directory and information for international graduate students;
  - The university sets up internal grants, fundings and fellowships specifically for international students, to compensate for the lack of fundings available for them in the US
  - Providing trainings and support for obtaining fellowships that are not NSF/NIH targeted to international students, for example, organizing workshops. Currently, there are only workshops for NSF grant writing.
  - During the students' interview process, the university should be open to the funding opportunities international students have and provide support to discuss with them if they can or cannot secure external funding
- Our analysis (Section 3.3.1) shows the international students find it difficult to think themselves are eligible researchers, compered to their domestic peers. In addition to all the unique challenges students face, the low visibility of international scholars might contribute to this issue. To create 'role models' for international students that academic success can be achieved by international identity scholars. We recommend the university taking the initiative to
  - establish mentor programs between international graduate students and international background faculty members and postdocs.
  - build a community of international scholars, e.g., the university or department can help connecting current international graduate students with international applicants during visiting day or/and interviews
- Our report highlights the confidence in current career and future is a major factor contributing to internal graduate students' well-being (Section 3.1.1 and Section 3.3.1). Often the psychological obstacles and professional challenges interplay and contribute to the well-being issues. For example, a student who find it challenging in communicating their research in English might find it difficult to connect to other students and faculty in the department, and might feel their research does not get recognized by others in the community.
  - Based on this, we recommend the university leadership initiate collaboration between campus mental health service, e.g., CPS and graduate student career development services, e.g., GradFUTURES, English Learning Program, etc, to provide services targeting international graduate students to enhance their skills by professional trainings as well as counseling or group therapy.
- More generally, a high proportion of students - both in the international and domestic groups - reported facing a variety of minor and major obstacles to their academic progress; these obstacles related to the more 'logistical' factors like immigration and job

market as well as were community-related like the sense of academic and social isolation - given the apparent ubiquity of the issue, it behoves greater investigation and efforts to alleviate

#### **4.2. Policy recommendations for improving international graduate students' utilization of on-campus well-being services**

Despite the university provides many services to support students' well-being and mental health, our data analyses (e.g., Figure 10) show international graduate students at Princeton University utilize such services less than their domestic counterparts. However, international graduate students have equal or larger needs for support of their well-being, compared to domestic students. Based on literature review, we identify main causes for under-utilization of the service might include: culture stigma against the use of mental health services, language barriers, little demographic or cultural commonality with mental health service providers, cultural misunderstandings and ignorance between the students and mental health staff (Section 2.2.2 and Section 2.1.3). *How should we improve the utilization of the on-campus services in international graduate students?* Based on our research, we come up with the following policy recommendations.

- To increase the utilization of Counselling and Psychological Services (CPS) among international students,
  - We suggest increasing representation of international-background service providers in CPS and different language-speaking providers. We also suggest CPS provides training for current counselors on international students' mental health stressors. For counselors who have international background and who complete the training and feel confident in working with international students, they could label 'working with international students' as one of their expertises on their biography page;
  - We suggest CPS collaborating with other service providers to organize events to raise awareness and mitigate culture stigma on help-seeking for mental health issues among international students;
  - We suggest improving the transparency of the information about how to obtain mental health services, the available resources, the duration and amount, the likely costs etc., and making the information accessible to the graduate students, by flyers in department buildings, university/department orientations, etc.
- To reduce the difficulty and financial burden for international students seeking culturally similar mental health counselors, we suggest UHS should cooperate with Aetna to include out-of-network providers *in network* according to home country's qualifications criteria. International students often arrive with an existing relationship with their therapist from their home country, and are more comfortable speaking with someone who speaks their mother tongue and understands their unique cultural, political, and societal circumstances. Current reimbursement mechanism does not cover a high enough rate (currently 60%) and requires upfront payment and has a long processing time (minimum of 60 days for international invoices).

- To better respond to emergency events in other countries and support the international graduate students from the countries, we suggest the graduate school and CPS establishes a emergency response system for students to seek for help in finance and mental health support when an emergency occurs, and for students who come from conflict-affected countries or areas. We suggest the graduate school should actively reach out to the affected international student body to provide the support, via emails, GSG representatives, international student organizations, etc.
- To further understand unique pattern of service utilization among international students, we suggest on-campus **service providers could establish their own working groups focusing on international students** to research, analyze, and troubleshoot the issue that international graduate students have less utilization of their services.
- To better include international students in many aspects of the campus life, we suggest the university leadership includes the identify of being international students in the goal of improving diversity, inclusion and equity, especially when this identify intersects with others. Therefore, we suggest
  - Cultural awareness trainings for domestic students, professors, and academic staff
  - Setting up international student representative positions in decision-making committees relating to on-campus services
  - Allocating a physical room on campus where international students can decompress and have a safe space for a group to gather and socialize, and for individuals to hold Telehealth sessions in cases of virtual therapy for those who live with others and don't have a private space at home
- Finally, to implement (any of) the policies suggested, we suggest the university/graduate school establishes **an international student mental health funding**.

#### 4.3. Recommendations for future survey and research in student population

- The future surveys should ask
  - More details about international students' background and identity. Even though the international graduate student consists of 50% graduate student body, students from each country or culturally similar areas could be marginalized. Moreover, different backgrounds might reflect the students' other identities which intersect with being an international student.
  - Questions about financial wellbeing/stress of finding fellowships.
  - Questions about the effects of big emergency events, e.g., war, pandemic, earthquake, etc. Including these questions would help us better understand if international students are affected disproportionately, compared to the US students.
- The current questions could be improved by
  - including questions that are more fact based, along with self-reported questions to address the potential biases. Due to the cultural stigma against reporting mental health issues, and less acculturation to western cultural norms, self-reported mental health indicators might have biases for international graduate student population.

- Following up on the current and future surveys, we suggest
  - Further detailed and qualitative investigation, e.g., by organizing focus groups. For example, the high sense of academic and social isolation among graduate students and experience of unwelcome identity-based remarks;
  - The survey conducting office considering a co-production approach to the qualitative research, i.e. including international students in the thoughtful design and implementation of research;
  - The survey conducting office making the findings public, and especially accessible to international graduate students when they are the focus population.

## REFERENCES

- Allen, H.K., Lilly, F., Green, K.M. et al. (2022). Graduate Student Burnout: Substance Use, Mental Health, and the Moderating Role of Advisor Satisfaction. *Int J Ment Health Addiction*, 20, 1130–1146. <https://doi.org/10.1007/s11469-020-00431-9>
- Aubrey, R. (1991). International students on campus: A challenge for counselors, medical providers, and clinicians. *Smith College Studies in Social Work*, 62(1), 20–33. <https://doi.org/10.1080/00377319109516697>
- Bekkouche, N.S., Schmid, R.F. and Carliner, S. (2022), “Simmering Pressure”: How Systemic Stress Impacts Graduate Student Mental Health. *Perf Improvement Qrtly*, 34: 547-572. <https://doi.org/10.1002/piq.21365>
- Bradley, G. (2000). Responding Effectively to the Mental Health Needs of International Students. *Higher Education*, 39(4), 417–433. <http://www.jstor.org/stable/3447940>
- Cheng, D., Leong, F. T., & Geist, R. (1993). Cultural differences in psychological distress between Asian and Caucasian American college students. *Journal of Multicultural Counseling and Development*, 21, 182–190. <https://doi.org/10.1002/j.2161-1912.1993.tb00598.x>
- Eisenberg, D., Golberstein, E., & Gollust, S. E. (2007). Help-Seeking and Access to Mental Health Care in a University Student Population. *Medical Care*, 45(7), 594–601.
- Evans, T., Bira, L., Gastelum, J. et al. Evidence for a mental health crisis in graduate education. *Nat Biotechnol*, 36, 282–284 (2018). <https://doi.org/10.1038/nbt.4089>
- Furr, S. R., Westefeld, J. S., McConnell, G. N., & Jenkins, J. M. (2001). Suicide and depression among college students: A decade later. *Professional Psychology: Research and Practice*, 32, 97–100. <https://doi.org/10.1037/0735-7028.32.1.97>
- Givens, J. L., & Tjia, J. (2002). Depressed Medical Students’ Use of Mental Health Services and Barriers to Use. *Academic Medicine*, 77(9), 918.

Harvey, T., Robinson, C., & Welch, A. (2017). The Lived Experiences of International Students Who's Family Remains At Home. *Journal of International Students*, 7(3), 748–763.

<https://doi.org/10.5281/zenodo.570031>

Hyun, J. K., Quinn, B. C., Madon, T., & Lustig, S. (2006). Graduate Student Mental Health: Needs Assessment and Utilization of Counseling Services. *Journal of College Student Development*, 47(3), 247–266. <https://doi.org/10.1353/csd.2006.0030>

Hyun, J., Quinn, B., Madon, T., & Lustig, S. (2007). Mental Health Need, Awareness, and Use of Counseling Services Among International Graduate Students. *Journal of American College Health*, 56(2), 109–118. <https://doi.org/10.3200/JACH.56.2.109-118>

Lau, A., & Zane, N. (2000). Examining the effects of ethnic-specific services: An analysis of cost-utilization and treatment outcome for Asian American clients. *Journal of Community Psychology*, 28(1), 63–77. [https://doi.org/10.1002/\(SICI\)1520-6629\(200001\)28:1](https://doi.org/10.1002/(SICI)1520-6629(200001)28:1)

Mackie, S. A., & Bates, G. W. (2019). Contribution of the doctoral education environment to PhD candidates' mental health problems: A scoping review. *Higher Education Research & Development*, 38(3), 565–578.

McFadden, A., & Seedorff, L. (2017). International student employment: Navigating immigration regulations, career services, and employer considerations. *New Directions for Student Services*, 158(2017), 37-48.

McLachlan, D. A., & Justice, J. (2009). A grounded theory of international student well-being. *Journal of Theory Construction & Testing*, 13(1), 27-32. Retrieved from <https://login.ezproxy.princeton.edu/login?url=https://www.proquest.com/scholarly-journals/grounded-theory-international-student-well-being/docview/219188484/se-2>

Posselt, J. (2021), "Discrimination, competitiveness, and support in US graduate student mental health", *Studies in Graduate and Postdoctoral Education*, Vol. 12 No. 1, pp. 89-112. <https://doi.org/10.1108/SGPE-07-2020-0042>

Prieto-Welch, S. L. (2016). International Student Mental Health. *New Directions for Student Services*, 2016(156), 53–63. <https://doi.org/10.1002/ss.20191>

Thompson, V. L. S., Bazile, A., & Akbar, M. (2004). African Americans' Perceptions of Psychotherapy and Psychotherapists. *Professional Psychology: Research and Practice*, 35, 19–26. <https://doi.org/10.1037/0735-7028.35.1.19>

Tseng, W.-C., & Newton, F. B. (2002). International Students' Strategies for Well-Being. *College Student Journal*, 36 (4), 591.

Wei, M., & Bunjun, B. (2021). “We Don’t Need Another One in Our Group”: Racism and Interventions to Promote the Mental Health and Well-Being of Racialized International Students in Business Schools. *Journal of Management Education*, 45(1), 65–85.

<https://doi.org/10.1177/1052562920959391>

Woolston, C. (2017). Graduate survey: A love–hurt relationship. *Nature*, 550, 549–552.

<https://doi.org/10.1038/nj7677-549a>

Woolston, C. (2019). PhDs: the tortuous truth. *Nature*, 575, 403–406. doi:

<https://doi.org/10.1038/d41586-019-03459-7>

Wyatt, T., & Oswalt, S. B. (2013). Comparing mental health issues among undergraduate and graduate students. *American Journal of Health Education*, 44(2), 96–107.

Xu, Y., Gibson, D., Pandey, T. et al. (2021). The Lived Experiences of Chinese International College Students and Scholars during the Initial COVID-19 Quarantine Period in the United States. *Int J Adv Counselling*, 43, 534–552. <https://doi.org/10.1007/s10447-021-09446-w>

Yang, Tina. (2010). Stress, Coping, and Psychological Well-Being: Comparison among American and Asian International Graduate Students from Taiwan, China, and South Korea. [Doctoral Dissertation, University of Kansas] <https://kuscholarworks.ku.edu/handle/1808/6747>

Zhang, N., & Dixon, D. N. (2003). Acculturation and Attitudes of Asian International Students Toward Seeking Psychological Help. *Journal of Multicultural Counseling and Development*, 31(3), 205–222. <https://doi.org/10.1002/j.2161-1912.2003.tb00544.x>