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Alcohol and Sexual Risk among American College Students Studying Abroad

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Abstract

Recent studies show that during study abroad experiences, college students greatly increase their drinking behavior, experience multiple alcohol-related consequences, engage in sexual risk behaviors, and are at-risk for sexual violence victimization. These studies, however, have been limited by small sample sizes of students from single institutions who are often studying in a particular country or region. To better understand the extent of the risks experienced by college students studying abroad, we conducted a longitudinal survey study of 2,630 students from 65 different U.S. colleges and universities studying in 12 diverse locations abroad. Total drinks per week and heavy drinking days more than doubled while students were abroad, with heavier predeparture drinkers, men, and students under age 21 experiencing the greatest increases. There were few observed overall changes in alcohol-related consequences and risky sexual behaviors; however, specific groups, such as those with heavier predeparture consequences and sexual risk behaviors, men, and those on longer abroad programs reported greater consequences and risky sex abroad. One in five students (21%) experienced sexual violence abroad, with non-consensual physical contact the most prevalent form. Women, those under age 21, and those with a history of sexual violence were most likely to experience sexual violence abroad. Findings indicate that

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Compliance with Ethical Standards

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Ethical approval. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (RAND Human Subjects Protection Committee; Project Number 2017–0124) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent. All participants were consented prior to participation using an IRB-approved consent procedure.

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study abroad students may warrant targeted predeparture programming to help prevent heavy drinking and sexual violence experiences abroad.

Keywords

drinking; college students; study abroad; risky sex; sexual violence

Over 333,000 American college students study abroad annually (approximately 10% of all college students), a number that has tripled during the past 15 years, and which is projected to continue rising over the next 10 years (Institute of International Education [IIE], 2018). As more and more students elect to study abroad each year, risks specific to study abroad have been documented more clearly in the research literature. The most frequently reported risks while abroad are heavy drinking and alcohol-related consequences (Aresi, 2016). Studies document that students more than double their weekly alcohol use while abroad, and a substantial proportion report severe alcohol-related consequences, such as passing out or blacking out, finding themselves in dangerous situations, or experiencing alcohol-related injuries (Hummer et al., 2010; Pedersen et al., 2010b; 2012). Students who study abroad also report heavier drinking both before and after trips than students with no study abroad history, and these patterns of heavy drinking can influence overall mental health and physical health once students return home (Mitchell et al., 2016; Pedersen et al., 2010a). University administrators, study abroad directors, and student affairs staff cite alcohol misuse by students as the most concerning behavioral problem and a factor that contributes most to critical incidents abroad, including robberies, arrests, physical assaults, and even student deaths (LaBrie et al., 2013).

In addition to heavy drinking risk, students are also exposed to a number of sexual risks while abroad, including risky sexual behaviors (e.g., unprotected sex) and sexual violence (ranging from non-consensual sexual contact to attempted and completed sexual assault by force). The few, but notable, studies of risky sexual behaviors abroad show that 25% to 50% of students report risky sexual behavior while abroad, such as infrequent condom use, sex with multiple casual partners, and alcohol-related regretted sexual experiences (Hummer et al., 2010; Marcantonio et al., 2016). For sexual violence, three studies have indicated risk for sexual violence abroad (Flack et al., 2014; Hummer et al., 2010; Kimble et al., 2013). In one study, the rate of sexual violence victimization among 218 female students was three to five times higher while abroad compared to on campus (Kimble et al., 2013), where rates of sexual assault are already high (upwards of 1 in 5 female students) (Kilpatrick et al., 2007; Krebs et al., 2009). In another study, 19% of 208 female students reported sexual violence victimization abroad, with non-consensual sexual touching being most prevalent (16.8%), and with 3.8% experiencing a completed rape just within one to three months abroad (Flack et al., 2014). In another study of 49 men, nearly 1 in 10 reported pressure to have sex with someone while intoxicated (Hummer et al., 2010). Sexual violence abroad has the potential to lead to lasting physical and psychological effects (e.g., trauma, sexually transmitted infections).

Overall, this small body of research indicates that study abroad can be an at-risk event for heavy drinking, risky sexual behavior, and sexual violence among American college students; however, studies are all based on small samples of students from single institutions and often include students from single study abroad country locations. Thus, it is still unclear how concerning drinking and sexual risk are for students abroad as larger studies are needed that include students from numerous home institutions and those studying in various locations abroad. Such work can help inform and develop empirically-based programs to prevent such heavy drinking, risky sexual behavior, and sexual violence abroad. Prior studies' small sample sizes also make it difficult to examine potential demographic predictors of changes in drinking and risky sex while abroad, such as gender, race/ethnicity, age, and location of study abroad. Moreover, an increasing number of students are studying abroad as a result of the availability of short-term programs—about 65% of study abroad students complete programs lasting eight weeks or less (IIE, 2018); however, very little is known about risks associated with these shorter versus more traditional semester/quarter-long programs.

To address limitations of previous work on alcohol and sexual risk for students abroad, we surveyed 2,630 students from 65 different U.S. institutions studying abroad in 12 locations across both traditional semester/quarter programs and shorter-term programs. Findings can increase awareness of the problems for students and provide a better understanding of risk across locations so that university administrators, study abroad personnel, and researchers can develop programs to better address risks for students prior to departure and during their time abroad.

Methods

Participants and Procedures

Study abroad office personnel from 65 U.S. colleges and universities sent an email to their prospective study abroad students with information about the study. Interested students clicked on a link from that email and completed a brief screening questionnaire to assess for eligibility: (1) between the ages of 18 and 25; (2) planning to study abroad in one of the 12 most popular study abroad locations (i.e., Australia, China, Costa Rica, France, Germany, Ireland, Italy, Japan, Mexico, South Africa, Spain, or the United Kingdom;), which represents 59% of study abroad students; and (3) planned to study abroad for between 4 and 21 weeks (approximately one month to one quarter/semester), which represents about two-thirds of all study abroad students (IIE, 2018). A total of 4,735 students completed the screening questionnaire with 3,186 meeting inclusion criteria (67%). These eligible students were emailed a link to an online predeparture survey within two weeks of their departure date abroad. Among the 3,186 invited to the study, 2,670 completed this predeparture survey (84% of the invited). From this sample, 40 students were dropped due to not ending up going abroad ($n = 9$), no longer being interested in the study ($n = 3$), duplicate records ($n = 4$), or miscommunication about time abroad which caused them to be ineligible for follow-up surveys ($n = 24$). Thus, the final sample at baseline included 2,630 students. Students came from four sequential cohorts: winter/spring 2018 ($n = 753$), summer 2018 ($n = 767$), fall 2018 ($n = 717$), and winter/spring 2019 ($n = 393$).

All procedures were approved by the local Institutional Review Board and all procedures were conducted online. Participants who reported on the baseline survey that they would be studying abroad between 60 and 150 days (about two to five months; long-term students; $n = 1,913$) were sent two follow-up online surveys via email: one survey approximately one month into their study abroad trip (first month abroad survey) and one survey at the end of their last week abroad (last month abroad survey). Those students studying abroad for less than 60 days (about two months; short-term students; $n = 717$) only received the last month abroad survey. Participants received a \$20 Amazon gift card for completing each survey. Overall, 90.6% of the sample completed all applicable surveys, with 89.2% of the long-term students completing all three applicable surveys and 94.3% of the short-term students completing both surveys.

Measures

Demographics.—At screening and baseline, participants indicated their sex, gender, age, race, ethnicity (Hispanic vs. non-Hispanic), class year, and location of study while abroad. Items for race and ethnicity were combined to yield a mutually exclusive race/ethnicity variable.

Alcohol use and consequences.—Drinking in the past 30 days was assessed with the Daily Drinking Questionnaire (DDQ; (Collins et al., 1985)). Participants indicated the typical number of drinks they consumed on each day of a typical week in the past month (α s ranged from 0.75 to 0.85 on the three surveys). Summing these values generated total drinks per week. A single item assessed the number of times one engaged in heavy drinking (5/4 or more drinks on one occasion for men/women) in the past month (“heavy drinking days”). Consequences from alcohol use in the past month was assessed with the 24-item Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ; Kahler et al., 2008). The scale yields a sum score from 0 to 24 experienced consequences (α s ranged from 0.85 to 0.88). Total drinks per week, heavy drinking days, and B-YAACQ scores were prespecified as the primary drinking outcomes. Three additional drinking behaviors (drinking days, average drinks per occasion, and peak drinks) were examined as secondary outcomes for descriptive purposes. Drinking days per week and average drinks per occasion were extracted from the DDQ. An additional item assessed the number of drinks consumed on the occasion in the past month when they drank the most (“peak drinks”).

Risky sexual behavior.

Risky sexual behaviors in the past month were assessed with the Sexual Risk Survey (SRS), a 23-item measure designed and validated with college students (Turchik & Garske, 2009). The SRS was modified to assess past month behavior and included items such as “how many times have you had an unexpected and unanticipated sexual experience?” and “how many times have you had vaginal intercourse without a latex or polyurethane condom?” The SRS allows for open-ended responses that were then recoded into ordinal categories (Turchik et al. 2015) for generating an overall score, which served as the primary risky sexual behavior outcome (α s ranged from 0.74 to 0.83). The SRS also yields five composite scores of number of uncommitted partners, risky sex acts, impulsive sexual behaviors, intent to engage

in risky sexual behavior, and risky anal sex acts. These subscales were examined descriptively, and the composite SRS score was used in the prediction models.

Sexual violence victimization.

Sexual violence victimization was assessed primarily with the Sexual Experiences Survey (SES) (Davis et al., 2014; Koss & Oros, 1985; Testa et al., 2004), which has been validated with college students and used in prior work with study abroad students (Kimble et al., 2013; Palmer et al., 2010). The measure was modified and informed by items from the National Drug-Facilitated, Incapacitated, and Forcible Rape study (Kilpatrick et al., 2007) to include 12 gender- and sex-specific items that reflect five aspects of sexual violence victimization: non-consensual/unwanted sexual contact, sexual coercion, completed sexual assault by force, alcohol- and drug-facilitated sexual assaults, and attempted sexual assault, as well as a composite score of any type of sexual assault (see items in Pedersen et al., 2019). Response options at predeparture captured whether students experienced any sexual violence victimization prior to going abroad (in college, prior to college separately), and response options on the last month abroad survey reflected experience of any sexual violence victimization during the entire trip abroad. Experience of any sexual violence abroad (yes/no) was the main outcome for sexual violence victimization. We also included Ns and percentages of students reporting categories of non-consensual/unwanted sexual contact, sexual coercion, completed sexual assault by force, alcohol- and drug-facilitated sexual assaults, and attempted sexual assault.

Analytic Plan

First, we computed descriptive statistics that showed unadjusted means for each primary outcome at each timepoint for participants who completed the predeparture survey and at least one of the two follow-up surveys. Standardized effect size differences (Cohen, 1992) were used to assess the magnitude of change between predeparture and a given follow-up for each outcome (i.e., small effect ~ 0.20, moderate effect ~ 0.50, large effect ~ 0.80 or larger). Next, we estimated hierarchical linear regression models that examined multivariate associations between demographic predictors (gender, race/ethnicity, age, study abroad location, and length of program) and our three drinking outcomes and the risky sex outcome. Our final longitudinal dataset included repeated measures from the predeparture (baseline), first month, and last month abroad surveys. Students were nested within 65 schools, thus, models included random effects for both schools and students. Predictors included an indicator of whether they completed short- or long-term programs, whether the response was from the first month or last month abroad survey (i.e., time fixed effects), the predeparture value of the outcome, gender (man/woman), the program location, an indicator of age comparing those who were 21 and older to those under 21 at predeparture, and race/ethnicity (White, Latinx, Asian/Pacific Islander, Other). To describe differences between study abroad locations, we computed post-estimation least squares means comparison (with effect sizes) between each location and the grand mean for students from all locations abroad. These estimates helped capture locations where students changed their drinking and sexual behaviors more or less compared to an “average student” among the 12 locations.

For the sexual violence outcome, we ran a multivariable mixed logistic regression model with a random effect for school, predicting any experience of sexual violence victimization abroad. The model included (as above) an indicator of whether they completed short- or longterm programs, gender, an age indicator (21 and older versus under 21), race/ethnicity group, and location of study abroad. Additionally, we included indicators of whether the participant reported any sexual violence victimization during college prior to leaving for abroad and whether the participant reported any sexual violence victimization before college (lifetime sexual violence). We computed post-estimation least squares means comparison (with effect sizes) between each location and the grand mean for students from all locations abroad.

To avoid issues with multicollinearity, we ran all five models in preplanned sensitivity analyses that controlled for number of weeks abroad and for an indicator of cohort. Including these variables in analyses did not change observed effects from models; thus, we present models without these variables for parsimony and interpretability. Model predictors had no missing values except for gender, which was undefined for 9 (0.3%) participants who did not identify as a gender; these 9 were excluded from regression models. The follow-up response rate was high; however, we verified there were no differences on predeparture variables between follow-up responders and non-responders.

Results

Table 1 contains a description of the sample. Students were on average 20.1 ($SD = 0.92$) years old, and the majority (73%) were under 21 years old at predeparture. Participants tended to be White (70%), women (78%), and most participants were studying abroad in Spain, Italy, the United Kingdom, or Australia. Though not directly comparable because our sample was limited to those fitting eligibility criteria, and we did not randomly select participants from the population, our sample contained a slightly higher proportion of women and was more racially/ethnically diverse than the national study abroad student population (IIE, 2018).

Drinking Outcomes

Figure 1 contains means at each time point for drinks per week. The number of drinks per week nearly doubled from predeparture during the first month abroad (4.96 drinks to 9.43 drinks; effect size difference = 0.71), and remained approximately level between the first and last months abroad (9.30 drinks; effect size difference between first and last month = -0.02). In the model predicting drinks per week over time (see Table 2), we found that predeparture heavier drinking levels ($t = 36.05$, $p < .001$), male gender ($t = 10.27$, $p < .001$), and age under 21 ($t = 3.27$, $p = .001$) were significantly associated with increased number of drinks per week while studying abroad. To examine location effects in more depth, we computed effect sizes for comparisons between mean drinking by location of study abroad program compared to the grand mean of drinking across all locations using the estimated hierarchical model (see Table 4). As shown, there were small negative effect sizes ($d_s = \sim -.30$) for China, Costa Rica, Japan, and Mexico such that participants in these locations drank fewer

drinks per week compared to an average student (e.g., ~6 drinks per week in these locations vs. the grand mean of 8.71 drinks).

For heavy drinking days, students more than doubled the number of occasions they drank 5/4 or more drinks on an occasion (1.63 days at baseline to 3.77 days at first month abroad; effect size difference = 0.81; see Figure 1). Heavy drinking days remained approximately level between the first and last months abroad (3.59 days; effect size difference = -0.07). In the model predicting heavy drinking days (see Table 2), we found that predeparture heavier drinking levels ($t = 29.12, p < .001$), male gender ($t = 5.08, p < .001$), and age under 21 ($t = -2.51, p < .001$) were significantly associated with increased heavy drinking days abroad. Regarding location effects, there were small negative effect sizes ($d = -.30$) for Costa Rica, Japan, and Mexico such that participants in these locations reported fewer heavy drinking days compared to an average student (see Table 4). Appendix A contains means and confidence intervals over time for secondary outcomes of drinking days, average drinks, and peak drinks.

Figure 1 also shows that the number of consequences from drinking alcohol stayed nearly level from predeparture levels for participants as a whole (3.25 consequences to 3.39 consequences to 3.29 consequences; effect size differences = 0.04 and -0.03, respectively). In the model predicting consequences over time (see Table 2), we found that report of more predeparture consequences ($t = 32.78, p < .001$), completion of a long-term program ($t = 4.99, p < .001$), male gender ($t = 2.32, p = .021$), and age under 21 ($t = -2.71, p = .007$) were significantly associated with increased consequences while abroad. We also found that participants reported fewer alcohol-related consequences on the first month abroad survey than on the last month abroad survey ($t = -3.09, p = .002$). Location of study abroad program analyses comparing consequences in each location to the grand mean across all locations revealed notably small effect size mean differences for China ($d = -0.15$), Costa Rica ($d = -0.15$), Japan ($d = -0.20$) and Mexico ($d = -0.31$), such that, compared to “average students” abroad in all locations, participants in these locations experienced fewer alcohol-related consequences. Participants in Germany experienced a greater increase in consequences ($d = 0.16$) (see Table 4).

Risky Sexual Behavior

Figure 1 includes estimated means at each time point for the score on the SRS, which shows that overall, sexual risk behaviors decreased from predeparture levels while abroad during the first month and stayed approximately level during the last month abroad (SRS score of 4.76 to 3.41 to 3.54; effect size differences = -0.23 and 0.02, respectively). In the model predicting sexual risk behaviors while studying abroad (see Table 3), predeparture sexual risk behaviors ($t = 19.82, p < .001$), completion of a long-term program ($t = 4.74, p < .001$), and male gender ($t = 4.09, p < .001$) were significantly associated with increased risky sexual behaviors while abroad. We also found that participants reported lower SRS scores on the first month abroad survey than on the last month abroad survey ($t = -4.20, p < .001$). We found a few notable differences by location with students in Costa Rica, South Africa, and China (effect size between -0.16 and 0.28) reporting fewer sexual risk behaviors compared to the average student across all locations. Appendix A contains means and confidence

intervals for secondary risky sexual behavior outcomes of sexual risk taking with uncommitted partners, risky sex acts, impulsive sexual behaviors, intent to engage in risky sexual behavior, and risky anal sex acts.

Sexual Violence Victimization

Figure 2 displays the number of participants who experienced sexual violence overall (primary) and by secondary outcome categories for all participants, men, and women. Approximately one in five participants (21.0%) reported any sexual violence victimization while abroad. Most of these incidents were reported as non-consensual/unwanted sexual contact, with 418 women and 61 men reporting such victimization (19.7% of the sample overall). Substantial numbers of students experienced other forms of sexual violence as well, with 1.2% experiencing sexual coercion, 0.8% completed sexual assault by force, 1.2% alcohol- and drug-facilitated sexual assaults, and 2.4% attempted assaults. The model predicting any sexual violence while abroad revealed that completion of a long-term program (estimate=0.55, $t = 4.09$, $p < .001$), female gender (estimate = -0.57 , $t = -3.78$, $p < .001$), and age under 21 (estimate = -0.25 , $t = 2.04$, $p = 0.041$) were significantly associated with a greater likelihood of sexual violence victimization abroad. Experience of sexual violence victimization before college (estimate = 0.63, $t = 5.53$, $p < .001$) and while in college (estimate = 1.12, $t = 10.47$, $p < .001$) were also significantly associated with an increased risk of sexual violence victimization abroad. When comparing rates of sexual violence among participants in each location as compared to the grand mean for all locations, all effect size differences were 0.12 or less, indicating limited differences between each location and the grand mean (see Table 4). Appendix A contains the N and percentage of the sample that experienced each of the secondary sexual violence outcomes.

Discussion

Findings from this large longitudinal study confirmed what smaller studies have shown: college students who study abroad experience increases in overall drinking and heavy drinking days (Aresi, 2016), and a substantial number of students experience sexual violence (Flack et al., 2014; Hummer et al., 2010; Kimble et al., 2013). Study abroad students more than doubled their number of drinks per week and number of heavy drinking days during the first month abroad, and these higher drinking levels remained over the course of their abroad experience. Despite the increases in these drinking outcomes, we did not find substantial increases in alcohol-related consequences. Regarding risky sexual behaviors, although other work has found that a number of men and women report risky sexual behavior abroad (Hummer et al., 2010; Marcantonio et al., 2016), we found that risky sexual behavior did not increase from predeparture levels while students were abroad; in fact, our findings showed that it decreased slightly. Although we did not observe an increase in sexual violence victimization when studying approach, the rate was quite high (one in five students in just two to five months abroad), as it was for students in our study back in the United States and for the general population of college students. Nonconsensual/unwanted sexual contact (i.e., having one's private parts touched by another person without giving consent) was the most frequently reported, with a notable number of participants experiencing other forms of sexual violence, including forcible rape and attempted rape. Rates of sexual violence in this

large multi-institution study were similar to those found among a small sample of female study abroad students in prior work (19% any sexual violence victimization; 16.8% non-consensual sexual touching) (Flack et al., 2014).

In terms of risk factors, as one might expect, greater predeparture levels of drinking and consequences were associated with an increased number of drinks per week, heavy drinking days, and more consequences while abroad. Male students, who are at risk for heavier drinking and alcohol consequences on campus (Merrill & Carey, 2016; Turrisi et al., 2006) were also at increased risk abroad, as were participants under the legal drinking age in the United States. As all 12 countries had legal drinking age limits under 21, easier access to alcohol as a function of studying in a country with a more lenient alcohol age policy may play a role in heavy and problematic alcohol use abroad. The impact of increased access on drinking abroad, as well as exposure to different types of alcohol common to the location, drinking settings (e.g., night clubs, bars), and varying expectations around drinking in different countries (e.g., drinking may be more normalized in Australia than in China), could be explored in future qualitative and quantitative work. Though drinking levels were high across location of study, drinking and related consequences in the Asian and Latin American countries were lower than the average across all locations. Smaller studies have indicated that students in European countries are at particular risk (Pedersen et al., 2010b; 2014), as are students studying in a country with a higher per capita drinking rate than the U.S. (Pedersen et al., 2011). It may be important during predeparture programming to address the cultural aspects of drinking in countries where heavy use may be more prevalent or normative. Moreover, prior work has shown that compared to students who do not intend to study abroad during college, students who intend to study abroad and those who have studied abroad report heavier and more problematic alcohol use (Pedersen et al., 2010a). It is possible that study abroad students are already starting at a heavier drinking level than a typical student, and therefore their observed increases in drinking could be more pronounced and problematic. Policies to screen out on-campus heavy drinkers or to provide them with additional or more intensive predeparture programming may be important.

Descriptively, looking at secondary drinking outcomes, we found that although drinking days increased abroad by about 1.5 days, the average amount of drinks consumed per occasion only increased by about one quarter of a drink. Thus, it appears from this study and other longitudinal and cross-sectional work (Hummer et al., 2010; Marcantonio et al., 2019; Pedersen et al., 2014) that students are drinking more frequently but not necessarily in higher quantities on each drinking occasion. This could be due, in part, to drinking being part of the cultural engagement aspect of life in some of the locations; for example, drinking wine with meals in the European countries. However, it could be argued that students are at greater risk due to increasing their frequency of drinking, as abroad they are now intoxicated or impaired (even moderately) on more days than when they were when home on campus. Even though they typically drank around the same amount abroad, we did observe increases in peak drinks per occasion and heavy drinking days, which could put students at risk during these drinking events.

The null finding for alcohol-related consequences, though consistent with prior work (Hummer et al., 2010; Pedersen et al., 2014), warrants further investigation as the

association between heavy drinking and negative consequences is well-established (Mallett et al., 2013; White & Hingson, 2013). One potential explanation for null findings is the measure used. As students are drinking in novel environments, they may be more likely to experience different types of consequences not assessed with the B-YAACQ. Also, participants reported on the 24 consequences using a yes/no format rather than assessing number of times each consequence was experienced, making it indeterminable if there were particular consequences that were repeatedly experienced. More nuanced examination of abroad-specific consequences may be necessary.

For risky sexual behaviors, lengthier programs, higher predeparture levels of risky sexual behavior, and male gender were associated with risky sex abroad. However, overall, risky sex did not increase from predeparture levels; rather scores on the SRS decreased. One reason for this is that study abroad students may have smaller social networks in their new locations, and subsequently, fewer sexual encounters (risky or not). Another reason for this finding may have been that with an increase in drinking came an increase in protective sexual strategies. For example, one study found that higher levels of drinking abroad were associated with greater sexual intercourse behavior while abroad, but with increased odds of condom usage (Marcantonio et al., 2019). However, it should be noted that participants in the current study still engaged in risky sexual behaviors, as they do on campus (American College Health Association., 2018; Mair et al., 2016), with impulsive sexual behaviors being the most highly endorsed behavior among our sample (e.g., leaving someplace with someone you just met, regretting sex, unanticipated sex). Thus, it is still crucial to address sexual risk behavior for students abroad.

In the current study, female gender and age under 21 associated with sexual violence abroad. Completion of a longer-term program was also associated with increased risk for sexual violence abroad, likely because there was a longer period of time for assaults to occur. However, future work should examine whether there are factors unique to programs that last longer than two month that may place students at increased risk. Similar to prior work demonstrating that prior victimization associates with subsequent victimization (Gidycz et al., 1993; Mellins et al., 2017; Walker et al., 2019), those who experienced any sexual violence before or during college were particularly vulnerable to victimization while abroad. Given these highly concerning rates, efforts to prevent sexual violence abroad in all forms is clearly warranted.

Study limitations are evident. We focused on the 12 most popular study abroad locations in order to examine location differences, which is a strength as most other research includes single countries or examines risk behavior by region. Nevertheless, we cannot speak to risk behavior among students across other institutions or among those that study in other locations. By not randomly sampling from the study abroad population and by restricting our eligibility criteria by location, age, and length of time abroad, the sample was under-representative of male and White students. Lastly, we designed this study to examine changes in alcohol and sexual risk from predeparture to abroad, but we do not have the temporal ability from the surveys to look at how change in one affected change in another (e.g., how increases in drinking from predeparture levels associated with experiences of sexual violence abroad).

Implications for Prevention.

Findings suggest there is high-risk drinking and sexual violence victimization occurring during study abroad programs, which highlights the need for colleges and universities to provide effective prevention programming for study abroad students specifically, in addition to the programming that is needed to prevent these risk on campus. However content analyses of institutions' study abroad websites suggest that programs provide limited information about sexual violence or alcohol use on their websites (Marcantonio et al., 2019b), and discussions with study abroad directors revealed that only 62% and 53% report that they address study abroad-specific sexual violence risk and safe sex practices, respectively, during predeparture programs (Marcantonio et al., 2018). Regardless of whether programs are offered or not, study abroad students report limited exposure to these, with only 38% of students reporting receipt of predeparture programs specific to alcohol/drug risk abroad, and only 22% reporting receipt of predeparture sexual violence prevention programs (Smucker et al., 2019).

Given heavy drinking and sexual violence abroad, research is needed to test evidence-based predeparture programs targeting these risks abroad. Unfortunately, despite numerous studies calling for increased attention to students studying abroad as an at-risk group, there is only one empirically-based intervention that addresses problematic drinking for study abroad students (Pedersen et al., 2017). Moreover, this intervention has only been tested on a small scale at a single institution and it does not address sexual violence. Promising findings indicate that helping students engage with the culture while abroad, as opposed to spending most of their time with other American students in drinking settings (Pedersen et al., 2011; 2012), and correcting students' misperceptions about the drinking behavior in their host country (Pedersen et al., 2011) may prevent escalation of heavy drinking and consequences abroad (Pedersen et al., 2017). A randomized controlled trial of a heavy drinking and sexual violence prevention program for students abroad is currently underway to test such approaches and help determine which key components of programs are necessary to best prevent risk (Pedersen et al., 2019).

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1.

Changes in drinks per week, heavy drinking days, alcohol-related consequences, and risky sexual behavior from predeparture to first and last month abroad (means and effect sizes)

Note: Values for drinks per week outcome represent sum of total drinks in the past 30 days from the Daily Drinking Questionnaire at each time point. Values for heavy drinking days represent response to single item regarding number of times heavy drinking occurred in the past 30 days. Values for the number of alcohol-related consequences outcome represent sum score on the past 30-day Brief-Young Adult Alcohol Consequences Questionnaire at each time point. Values for risky sex event represent sum score on the Sexual Risk Survey (past month) at each time point.

Figure 2.

Number of students experiencing sexual violence victimization abroad: all participants and by gender

Note: Percentage reflects the percentage of participants who completed the sexual violence items on the last month abroad survey (N = 2,436) within each category of all participants, men, and women (e.g., 21% of all participants, 23.6% of all women, and 12.0% of all men abroad reported any sexual violence)

Table 1.

Sample Descriptives

	Study Abroad Students (N = 2,630)	
	N/Mean	%/SD
Age continuous	20.11	0.92
Age dichotomous		
Under 21	1,916	72.8%
21 and older	714	27.2%
Race/ethnicity		
White	1,850	70.3%
Hispanic/Latinx	341	13.0%
Asian / Pacific Islander	260	9.9%
Multi-racial	115	4.4%
Black	61	2.3%
America Indian/Alaskan Native	3	0.1%
Gender		
Men	573	21.8%
Women	2048	77.9%
Does not identify with a gender	9	0.3%
Length of time abroad (weeks)	13.65	5.83
Short term study ¹	717	27.3%
Long term study ²	1,913	72.7%
Location of study		
Australia	240	9.1%
China	126	4.8%
Costa Rica	50	1.9%
France	213	8.1%
Germany	125	4.8%
Ireland	168	6.4%
Italy	523	19.9%
Japan	87	3.3%
Mexico	23	0.9%
South Africa	51	1.9%
Spain	587	22.3%
United Kingdom ³	437	16.6%

¹ Short term programs were between 28 and 59 days.

² Long term programs were between 60 and 150 days.

³ United Kingdom included study locations in England, Scotland, Wales, and Northern Ireland.

Table 2.

Models predicting drinking and risky sex outcomes

	Drinks per week		Alcohol-related consequences		Heavy drinking days		Risky sexual behavior	
	Estimate (SE)	95% CI	Estimate (SE)	95% CI	Estimate (SE)	95% CI	Estimate (SE)	95% CI
Intercept	5.44 (0.61)	4.22 – 6.66	1.70 (0.27)	1.16 – 2.24	2.09 (0.34)	1.42 – 2.76	0.82 (0.51)	–0.19 – 1.83
First month survey (vs. last month survey) outcome	–0.14 (0.15)	–0.43 – 0.16	–0.23 (0.07)	–0.37 – –0.08	0.08 (0.09)	–0.10 – 0.26	–0.57 (0.14)	–0.84 – –0.31
Long-term program ¹	–0.26 (0.34)	–0.94 – 0.41	0.77 (0.15)	0.47 – 1.08	0.01 (0.19)	–0.37 – 0.39	1.38 (0.29)	0.81 – 1.95
Baseline value of outcome	0.74 (0.02)	0.70 – 0.78	0.46 (0.01)	0.43 – 0.49	0.78 (0.03)	0.72 – 0.83	0.36 (0.02)	0.32 – 0.39
Male gender ²	3.12 (0.30)	2.52 – 3.71	0.31 (0.13)	0.05 – 0.57	0.85 (0.17)	0.52 – 1.17	1.04 (0.26)	0.54 – 1.55
Age 21 and older ³	–0.92 (0.28)	–1.46 – –0.37	–0.34 (0.13)	–0.59 – –0.09	–0.39 (0.16)	–0.69 – –0.08	–0.22 (0.24)	–0.68 – 0.25
Location of study ⁴								
Australia	0.82 (0.62)	–0.40 – 2.03	–0.42 (0.28)	–0.96 – 0.13	0.53 (0.34)	–0.14 – 1.21	0.25 (0.53)	–0.79 – 1.29
China	–2.24 (0.78)	–3.78 – –0.71	–0.92 (0.35)	–1.60 – –0.23	–0.64 (0.43)	–1.49 – 0.21	–0.88 (0.66)	–2.18 – 0.42
Costa Rica	–2.88 (1.01)	–4.86 – –0.89	–0.91 (0.46)	–1.80 – –0.02	–1.21 (0.56)	–2.31 – –0.11	–1.64 (0.87)	–3.34 – 0.05
France	–1.07 (0.66)	–2.36 – 0.22	–0.37 (0.29)	–0.95 – 0.21	–0.30 (0.36)	–1.01 – 0.42	0.28 (0.56)	–0.82 – 1.38
Germany	0.86 (0.75)	–0.61 – 2.33	0.20 (0.34)	–0.46 – 0.86	0.35 (0.42)	–0.47 – 1.17	0.96 (0.64)	–0.30 – 2.21
Italy	0.94 (0.56)	–0.16 – 2.04	–0.47 (0.25)	–0.96 – 0.02	0.59 (0.31)	–0.02 – 1.20	0.08 (0.48)	–0.86 – 1.01
Japan	–2.98 (0.86)	–4.67 – –1.28	–1.09 (0.39)	–1.85 – –0.33	–1.03 (0.48)	–1.97 – –0.08	–0.60 (0.74)	–2.05 – 0.85
Mexico	–2.34 (1.40)	–5.09 – 0.42	–1.48 (0.63)	–2.72 – –0.24	–1.00 (0.78)	–2.53 – 0.53	–0.92 (1.20)	–3.27 – 1.44
South Africa	–0.65 (1.03)	–2.67 – 1.37	0.08 (0.46)	–0.82 – 0.98	0.18 (0.57)	–0.95 – 1.30	–1.09 (0.88)	–2.81 – 0.63
Spain	0.79 (0.54)	–0.28 – 1.86	–0.06 (0.24)	–0.53 – 0.42	0.41 (0.30)	–0.18 – 1.00	0.35 (0.46)	–0.56 – 1.27
United Kingdom	0.36 (0.57)	–0.75 – 1.48	–0.61 (0.25)	–1.10 – –0.11	0.29 (0.31)	–0.33 – 0.90	0.17 (0.48)	–0.77 – 1.12
Race/ethnicity ⁵								
Asian/Pacific Islander	–0.76 (0.45)	–1.64 – 0.13	–0.26 (0.20)	–0.65 – 0.14	–0.49 (0.25)	–0.98 – 0.00	–0.49 (0.38)	–1.24 – 0.26
Hispanic/Latinx	–0.61 (0.38)	–1.35 – 0.13	0.06 (0.17)	–0.28 – 0.39	–0.35 (0.21)	–0.76 – 0.06	–0.60 (0.32)	–1.24 – 0.03
Other race/ethnicity	–0.71 (0.50)	–1.69 – 0.28	–0.10 (0.23)	–0.54 – 0.34	–0.29 (0.28)	–0.84 – 0.26	–0.44 (0.43)	–1.28 – 0.40

Bolded estimates are significant at $p < 0.05$. Specific t - and p -values for significant estimates are presented in the Results section. CI = confidence interval.¹ longer term programs (coded 1) compared to short term programs (0).

We did not interpret these location effects; rather we interpret location findings compared to the grand mean (see Table 4).

male gender (1) compared to female gender (0).

21 and older (1) compared under 21 (0).

location of program effect coded to compare to Ireland as reference country.

race/ethnicity effect coded compared to non-Hispanic White.

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Table 3.

Model predicting experience of any sexual violence abroad

	Odds Ratio	95% confidence interval
Intercept	0.09	0.05–0.15
Long-term program ¹	1.74	1.33–2.27
Sexual violence in college ²	3.08	2.49–3.80
Sexual violence before college ³	1.87	1.50–2.34
Male gender ⁴	0.56	0.42–0.76
Age 21 and older ⁵	0.78	0.61–0.99
Location of study ⁶		
Australia	0.82	0.47–1.43
China	1.27	0.66–2.44
Costa Rica	1.58	0.69–3.61
France	0.92	0.52–1.63
Germany	1.31	0.70–2.45
Italy	1.47	0.92–2.34
Japan	1.13	0.51–2.50
Mexico	1.06	0.31–3.62
South Africa	1.05	0.44–2.49
Spain	1.29	0.82–2.05
United Kingdom	1.06	0.65–1.72
Race/ethnicity ⁵		
Asian/Pacific Islander	0.96	0.64–1.43
Hispanic/Latinx	1.02	0.74–1.39
Other race/ethnicity	1.05	0.68–1.60

Bolded odds ratios are significant at $p < 0.05$. Specific t - and p -values for significant estimates are presented in the Results section.

¹ longer term programs (coded 1) compared to short term programs (0).

² any sexual violence victimization in college (1) compared to no sexual violence victimization in college (0).

³ any sexual violence victimization prior to college (1) compared to no sexual violence victimization prior to college (0).

⁴ male gender (1) compared to female gender (0).

⁵ 21 and older (1) compared under 21 (0).

⁶ location of program effect coded to compare to Ireland.

⁷ race/ethnicity effect coded compared to White.

Table 4.

Alcohol and sexual risk outcomes by location of study abroad compared to the grand mean of outcomes across all locations

	Drinks per week	Alcohol-related consequences	Heavy drinking days	Risky sexual behaviors	Sexual violence victimization
<i>Grand Mean</i>	8.71	3.22	3.32	3.27	17.4%
	M (ES)	M (ES)	M (ES)	M (ES)	M (ES)
Australia	9.42 (0.08)	3.18 (−0.01)	3.67 (0.08)	3.45 (0.03)	13.0% (−0.12)
China	6.36 (−0.28)	2.68 (−0.15)	2.49 (−0.19)	2.31 (−0.16)	18.7% (0.03)
Costa Rica	5.73 (−0.35)	2.69 (−0.15)	1.92 (−0.32)	1.55 (−0.28)	22.3% (0.12)
France	7.53 (−0.14)	3.23 (0.00)	2.84 (−0.11)	3.47 (0.03)	14.4% (−0.08)
Germany	9.46 (0.09)	3.80 (0.16)	3.48 (0.04)	4.15 (0.14)	19.2% (0.05)
Ireland	8.60 (−0.01)	3.60 (0.10)	3.73 (−0.04)	3.19 (−0.01)	15.4% (−0.05)
Italy	9.54 (0.10)	3.13 (−0.03)	2.11 (0.09)	3.27 (0.00)	21.1% (0.09)
Japan	5.62 (−0.36)	2.51 (−0.20)	2.13 (−0.28)	2.59 (−0.11)	17.0% (−0.01)
Mexico	6.27 (−0.29)	2.12 (−0.31)	3.31 (−0.27)	2.28 (−0.16)	16.2% (−0.03)
South Africa	7.95 (−0.09)	3.68 (0.13)	3.54 (0.00)	2.11 (−0.19)	16.0% (−0.04)
Spain	9.39 (0.08)	3.54 (0.09)	3.42 (0.05)	3.55 (0.05)	19.0% (0.04)
United Kingdom	8.97 (0.03)	2.99 (−0.06)	3.13 (0.02)	3.37 (0.02)	16.2% (−0.03)

Note: The effect size (ES) is the standardized mean difference between mean for the location of study and the grand mean within each outcome.