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Thesis for Clinical Psychology

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Are depressive symptoms a moderator of risky drug use within international students experiencing acculturative stress?

Abstract

The period of life between the ages of 18 and 25 is a period of increased vulnerability to various mental health problems. Research shows that while young adults are at increased risk for developing mental health problems, international students are more likely to endure psychological distress than domestic students due to factors related to acculturative stress. Acculturative stress has previously been associated to various mental health difficulties such as depression and suicidal ideation. Due to limited research on the coping mechanisms of international students, the aim of this study is to examine whether (a) there is an association between acculturative stress and risky use of drugs, and (b) whether depressive symptoms moderate this association among international students. **Method:** participants (n=125) completed an online survey that consisted of three questionnaires, (QIDS SR-16), (ASSIS) and a survey on frequency of risky drug use. **Results: A** Regression Moderation Analysis through PROCESS was used, indicating that there was no significant relationship between acculturative stress and drug use b = -.106, 95% CI [- .276, .064], t = -1.232, p =.220. There was also no significant relationship between depression and drug use b= .063, 95% CI [-.547, .674], t = .205, p= .837. Moreover, there was no significant moderation effect, b= .011, 95% CI [-.020, .043], t = .712, p= .477, indicating that the relationship between acculturative stress and drug use was not moderated by depression. **Conclusions:** The results demonstrate that there was no significant relationship between acculturative stress and risky drug use. Thus, higher levels of acculturative stress was not associated to higher levels of risky drug use within international students in the present study. Additionally, there was no significant moderation effect, indicating that depressive symptoms did not moderate the association between acculturative stress and risky drug use.

Introduction

The period of life between the ages of 18 and 25 is a period of increased vulnerability to various mental health problems (Arnett, 2007; Kessler et al., (2003). The Substance Abuse and Mental Health Services Administration (2012) examined data from 2008 to 2010 and found that over 16.6% of young adults experienced a major depressive episode in the previous year. There was an estimated 9.3 million adults who reported having suicidal thoughts in the past year however young adults between the ages of 18 to 25 had the highest percentage of serious thoughts of suicide with 7.4% (The Substance Abuse and Mental Health Services Administration, 2012). This demonstrates that while a broad range of individuals experience mental health difficulties, young adults between the ages of 18 to 25 are at increased risk.

Due to the increased risk of developing mental health problems, various research has been conducted on University students, as majority of students are young adults. One of the most common mental health problems is depression and depression rates within students have been reported to be increasing (Benton, Robertson, Tseng, Newton, & Benton, 2003). During the periods of 1989-2001, the "number of students with depression doubled" (Hahn, 2010, p. 1; Benton et al., 2003). Researchers found that the depression prevalence rate is 13.8% for undergraduates and 11.3% for graduate students "which are higher than national estimate of the 12-month prevalence rate of depression (10.3%) among the general public" (Hahn, 2010, p. 1; Eisenberg, Gollust, Golberstein, & Hefner, 2007; Kessler, McGonagle, Zhao, Nelson, Hughes, Eshleman, Wittchen, & Kendler, 1994). These findings illustrate that depression prevalence is high within university students and continuously increasing.

Risk factors of mental health problems within students are known to include academic stressors, such as exams as well as social and emotional difficulties (Eisenberg, Gollust, Golberstein, & Hefner, 2007). Research shows that while young adults are at increased risk for developing mental health problems, international students are more likely to endure psychological distress than domestic students due to factors related to acculturative stress (Hahn, 2010; Smith & Khawaja, 2011). International students additionally have to endure acculturative stressors such as increased educational burden (e.g., incongruity between reality and expectation of the university experience and adjusting to new teaching styles), and language deficits, discrimination, interpersonal problems, financial difficulties, etc., while also often lacking social support systems, increasing the risk of mental health problems (Yeh & Inose, 2003; Sovic, 2008).

Acculturative stress is associated to stress "related to the process of adapting to beliefs, practices, and values of a dominant culture" (Gomez, 2011, p. 1466). Acculturative stress incorporates multiple different factors such as the environmental quality that the acculturating individual is experiencing (Gomez, 2011). For example, perceived progress barriers and discrimination, alteration within the familial relationships such as the conflicts between values of the dominant culture and that of the individual's family. Moreover, quality decrease within the individual's social relationship such as due to language barriers within forming friendships and, finally, thoughts and attitudes others have toward the individual's original culture and country (Gomez, 2011). Studies have demonstrated, due to difficulties in adapting to new social and cultural environments (i.e., acculturative stress), stress-related physical, psychosocial and behavioral problems are frequent among international students (Yu et al., 2014).

Research demonstrates that adjustment challenges vary depending on one's cultural background. A study conducted by Khawaja and Stallman (2011) discovered that international students in Australia encountered adjustment challenges such as culture shock, educational demands, unmet expectations, psychological distress and social isolation. Tummala-Narra (2016) found that in addition to these difficulties, South Asian youths in the United States experienced family challenges such as changes in family structure and roles as well as high family expectations (Bhowmik, Cheung & Hue, 2018). Moreover, South Asian youths experienced emotional reactions such as frustration, embarrassment, anger and sadness as a result of experiencing racism directed toward themselves and their families (Tummala-Narra et al., 2016; Bhowmik, Cheung & Hue, 2018). While South Asian youths reported to experience the same challenges as international students experiencing acculturative stress, there were additional challenges faced by this specific population centering specifically on familial challenges. Therefore, it can be concluded that there are varying types and degrees of challenges associated with acculturative stress.

Acculturative stress has previously been associated to various mental health difficulties such as depression and suicidal ideation among adolescents and emerging adults (Hwang and Ting 2008; Cho and Haslam 2010; Gomez, 2011). Importantly, according to Hwang and Ting (2008) and Gomez (2011), acculturative stress increased the chances of being clinically depressed independently of general life stressors. Additionally, research found that students enduring depressive symptoms with higher acculturative stress report experiencing more thoughts about suicide than college students with depressive symptoms who are experiencing less acculturative stress (Walker, 2008). Various racial/ethnic minority

groups including Asian American, African Americans and Latinos have been reported to endure symptoms of depression and suicidal ideation in association to acculturative stress (Hovey & King, 1996; Joiner & Walker; Hwang & Ting, 2008). These findings demonstrate that solely acculturative stress can increase the chances of being clinically depressed. Additional psychological problems associated to acculturative stress include anxiety, helplessness, hopelessness, feelings of disappointment and inferiority, anger and loss (Mori, 2000; Hwang & Ting, 2008; Smith & Khawaja, 2011; Tummala-Narra, Desh- pande, & Kaur, 2016; Bhowmik, Cheung & Hue, 2018).

According to Polanco (2013), individuals who are ill-equipped to confront challenges occurring due to acculturative stress may develop maladaptive coping strategies that could increase vulnerability to negative mental health outcomes, these include self-blame, rumination over mistakes, avoidance, emotion suppression and control, isolation, and alcohol and substance abuse (Smith and Khawaja, 2011; Bhowmik, Cheung & Hue, 2018). In a research study conducted by Wong (2002), mainland Chinese immigrant women in Hong Kong used alcohol as a maladaptive coping mechanism is order to avoid emotions of loneliness, boredom, and interpersonal conflict. Moreover, Chinese students reported using fewer tension-reduction strategies such as exercising than did French-Canadian and English-Canadian students (Chataway & Berry, 1989; Bhowmik, Cheung & Hue, 2018). Chinese students also implemented fewer positive-thinking strategies than students from other cultures. This supports the notion that individuals are expected to cope with similar stressors differently due to being shaped by divergent cultural forces, expectations and values (Yakushko, 2010).

Despite the association between acculturative stress and negative mental health outcomes within international students, there is limited research on the maladaptive coping strategies of international students that experience acculturative stress (Hahn, 2010). It's a necessity to research this as young adults are vulnerable to participating in health risk behaviors such as substance abuse (Kanaparthi. 2009). Majority of previous research on coping strategies associated to acculturative stress focuses on alcohol use, binge drinking, risky sexual behaviors, drug use and more recently, emotional eating (Brook et al., 1998; Dantzer, Wardle, Fuller, Pampalone, & Steptoe, 2006; Karam, 2007; Kanaparthi, 2009; Vivancos, 2009; Kim, 2014; Pittman, 2017; Simmons, S. J. 2018). Research on maladaptive coping strategies associated to acculturative stress are limited. Moreover, not all studies support the findings that acculturative stress increases specific maladaptive coping strategies such as binge drinking or substance use (De La Rosa 2002; Epstein et al. 2001). The

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inconsistencies in results could be a result of cultural differences and its influence on coping strategies. As a result of the inconsistencies in the research, the exact relation between acculturative stress and risky drug use as a coping strategy within international students remains unclear.

Due to the limited research on acculturative stress and its association to maladaptive coping strategies, the aim of this study is to provide additional research on drug use as a maladaptive coping strategy within international students. Due to the legality of Marijuana in The Netherlands, the availability of drugs is greater in comparison to the home countries of various international students. Therefore, increasing its accessibility, drug use as a coping mechanism for international students could increase due to the availability of drugs being greater in The Netherlands. The purpose of this study is to examine whether (a) there is an association between acculturative stress and risky use of drugs, and (b) whether depressive symptoms moderate this association specifically among international students in The Netherlands. In terms of hypotheses, (1) it is expected that individuals experiencing higher acculturative stress will engage in more maladaptive coping strategies such as drug use than international students experiencing less acculturative stress. Secondly (2), due to the comorbidity of depression and substance use (American Psychiatric Association, 2013), it is also expected that international students experiencing both acculturative stress and symptoms of depression will engage in higher drug use activity as a maladaptive coping mechanism than students solely experiencing acculturative stress.

Method

Participants

Inclusion criteria for this study included (a) international university students (b) living in The Netherlands. Therefore, the participants for this study included international students (N=125) from Universities allocated throughout The Netherlands. Participants were randomly selected through snowballing and through distributing the online survey on various international student associations on social media such as on Facebook and Instagram. Flyers to part-take in the study were also placed at University campuses. Participants received no compensation for participating in this study. All participants of the study at hand signed an informed consent form before partaking in the study. All participants had a debriefing once having completed the online survey.

Table 1. Gender.

Female	Male
97	28

For this study, there were more female participants (N=97, 77.6%) than male participants (N=28, 22.4%). No participants identified as gender neutral or 'other'.

Table 2. Years of age.

18-20 years of age	21-24	25-28	29+
23	58	29	15

Participant ages ranged from 18 to 30+. Majority of participants were between the ages of 21-24 (N= 58, 46.4%), (N=29, 23.2%) of participants were between the ages of 25-28, (N= 23, 18.4%) were between the ages of 18-20, and (N= 15, 12%) were 29 years of age and above.

Table 3. Education.

Bachelor	Master	Ph.D.
52	67	6

Moreover, (N= 52, 41.6%) were Bachelor students, (N= 67, 53.6%) were Master students and (N= 6, 4.8%) were Ph.D. students.

Measurements

Three surveys were combined into one online survey for participants to complete. They consisted of the following:

Depression Levels

The *Quick Inventory of Depressive Symptomatology* (QIDS SR-16) was one of the scales used (Rush et al., 2003). This scale is a self-report measure of depression through the use of 16 items. This test indicates whether participants score to *have no depression, mild levels of depression, moderate depression, severe depression or very severe depression.* Questions in the QIDS -SR-116 correlate with the nine DSM-IV symptom criterion domains,

including: *Sleep disturbance* (initial, middle, and late insomnia or hypersomnia) (Q 1 - 4), *Sad mood* (Q 5), *Decrease/increase in appetite/weight* (Q 6 - 9), *Concentration* (Q 10), *Self-criticism* (Q 11), *Suicidal ideation* (Q 12), *Interest* (Q 13), *Energy/fatigue* (Q 14), *Psychomotor agitation/retardation* (Q 15 - 16). Scores from 1-5 indicate no depression, 6-10 scores indicate mild depression, 11-15 indicate moderate depression, 16-20 indicate severe depression and 21-27 indicate very severe depression. A total score is calculated for each participant, indicating the level of depression endured. The QIDS SR-16 ($\alpha = 0.75$, .767) was used to assess depression scores within international students.

Acculturative Stress Levels

An *Acculturative Stress Scale for International Students* (ASSIS) was used to measure levels of acculturative stress within participants through a likert self-report scale (Sandhu and Asrabadi, 1994). The ASSIS scale was chosen for this study as it is the only instrument designed to measure acculturative stress for international students. This assessment tool consists of 36 statements in which participants have to answer by using *strongly disagree, disagree, not sure, agree* or *strongly agree*. The general total scores of this assessment tool range from 36 to 180 on this scale. Higher scores indicate greater acculturative stress perceived by the participants. The scores on six subscales can be calculated by adding the individual scores on the relative items. The items are identified as followed: *perceived discrimination items, homesickness items, perceived hate items, fear items, stress due to change/culture shock items, guilt and miscellaneous*. The ASSIS ($\alpha = .93$, .74) was used to assess acculturative stress levels within international students in The Netherlands.

Risky Drug Use

A self-report Drug Use scale was created to measure the frequency of risky drug use of participants. Questions were coined based on the 'study design and method' of Johnston et al., (2018) as no general risky drug use assessment tool could be retrieved. This scale consists of 40 questions. The questions ask whether the specific substance has been taken in the participant's lifetime, since they have moved to The Netherlands, during the last 12 months and during the last 30 days. Participants were asked whether they used the following drugs: *Marijuana, Cocaine, Crack, 'Club' drugs* (MDMA, Ecstasy pill, Ketamine, Flunitrazepam also known as Rohypnol, etc.), *Amphetamines* (Speed, uppers, etc.), *Barbiturates* (downers, sleeping pills, etc), *Opiates* (Heroin, Morphine, Codeine, OxyContin, Vicodin), *tranquilizers*

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(Valium, Librium, Xanax, etc.), *inhalants* and *steroids*. However, only data regarding risky drug use in the last 30 days was used for statistical analyses. Participant selected answers based on the options provided, consisting of the following: *0 times, 1-2 times, 3-5 times, 6-9 times, 10-19 times, 20-39 times* and *40+ times*. The highest number of each response chosen was added to one another in order to conclude a total score of risky drug use frequency for each participant. For example, if a participant reported using two types of substances in the last 30 days and chose the answer *'10-19 times'* when asked how often they had used Marijuana in the previous 30 days, and '*3-5 times'* when asked how often they have used '*Club'* drugs, the highest numbers indicated in the responses would be chosen for addition. Such as, (19) [*marijuana*] and (5) [*Club drugs*], indicating a total score of (24). Therefore, it would be concluded that the frequency of drug use for this participant in the last 30 days was 24.

Frequency of risky drug use previous 30 days

No Frequency of Drug Use	Mild Frequency of Drug Use	Moderate Frequency of Drug Use	Severe Frequency of Drug Use
0	1-5	6-12	13+

A scoring method was designed for this assessment tool due to this not being a validated questionnaire.

- i) Scores of 0 indicated no risky drug use in the previous 30 days.
- ii) Mild frequency of drug use for this specific study indicated scores between 1-5. Due to participants on average engaging in risky drug use ***once a week***.
- iii) Moderate frequency of drug use indicated scores between 6-12. Due to participants on average engaging in risky drug use ***three times a week***.
- iv) Severe frequency of risky drug use for this specific study was indicated by participants engaging in risky drug use ***more than three times*** a week, indicated by scores <13+.

The Cronbach's alpha indicating the reliability statistic for this assessment tool in the present study consisted of (α = .731).

Statistical Analysis

The software used to conduct this research was the Statistical Packages for Social Science (SPSS, *version 25*). To test hypothesis 1, which states that international students

experiencing higher acculturative stress (ASSIS) will engage in more frequent risky drug use, and hypothesis 2, which states that international students experiencing both acculturative stress and symptoms of depression (QIDS SR-16) will engage in higher risky drug use activity than students solely experiencing acculturative stress, statistical analyses were conducted using a regression moderation analysis. The PROCESS tool [v3.0] in regression was used to conduct this analysis. The significance levels were set at P <.05. The number of participants in all three groups N=125.

Results

Figure 1. Mean and Standard deviations on the measure of total frequency of drug use, total acculturative stress and total depression scores in international students

	N	*Mean*	*SD*
Total Frequency of Drug Use	125	8.71	15.415
Total Acc. Stress	125	77.33	17.995
Total Depression	125	7.89	4.950

Descriptive statistics demonstrated that the average of total acculturative stress experienced by participants was 77.33 (SD = 17,995). The average of total depression scores was 7.89 (SD = 4.950). The average of total drug use was 8.71 (SD = 15. 415).

Figure 2. Results of Moderation Analysis through PROCESS

	COEFF	T	p	LLCI	ULCI
Total Acc. Stress	-. 106	-1.232	.220	-.276	.064
Total Depression	.063	.205	.837	-.547	.674

Int_1	.011	.712	.477	-.020	.043

Results indicate that there was no significant relationship between acculturative stress and drug use b = -.106, 95% CI [- .276, .064], t = -1.232, p =.220. There was also no significant relationship between depression and drug use b= .063, 95% CI [-.547, .674], t = .205, p= .837. Moreover, there was no significant moderation effect, b= .011, 95% CI [-.020, .043], t = .712, p= .477, indicating that the relationship between acculturative stress and drug use was not moderated by depression.

Discussion

The purpose of this study was to test whether there was an association between acculturative stress and risky drug use within international students. Moreover, depressive symptoms as a moderator for acculturative stress and risky drug use was assessed. To answer the research question, which is "Are depressive symptoms a moderator of risky drug use within international students experiencing acculturative stress?" Two hypotheses were tested, both were not confirmed. The results demonstrated that there was no significant relationship between acculturative stress and risky drug use. Thus, higher levels of acculturative stress was not associated to higher levels of risky drug use within international students in the present study. Additionally, there was no significant moderation effect, indicating that depressive symptoms did not moderate the association between acculturative stress and risky drug use.

Not all studies support the findings that acculturative stress increases maladaptive coping strategies, corresponding with the present study (De La Rosa 2002; Epstein et al. 2001). While the results demonstrated no significance, the average frequency of drug use within international students in the present study consisted of 9 times in 30 days. The maximum frequency of drug use in the last 30 days consisted of a frequency higher than 80 times. Importantly, 40 participants from 125 did not engage in any risky drug use in the previous 30 days, indicating that majority of international students did partake in risky drug use behaviors. It's crucial to note that drug use was present in over majority of participants. These results indicate that drug use within international students in The Netherlands is highly frequent with an average of 9 times in 30 days. As stressors such as academic stress is

indicated to be a risk factor of mental health problems within students, a reason for this highly frequent drug use could be that drug use is being used as a maladaptive coping strategy to stressors other than acculturative stress (Eisenberg, Gollust, Golberstein, & Hefner, 2007). However, further research would have to be conducted in order to test this assumption. Moreover, due to the legality of Marijuana in The Netherlands, it is a possibility that drug use was highly frequent within international students due to its easy accessibility. However, this only accounts for one substance, Marijuana, while various substances were reported to be used by international students. Therefore, it can be assumed that risky drug use was frequent not solely due to the easy accessibility of Marijuana.

In addition, it is a possibility that depressive symptoms did not moderate the relationship between acculturative stress and drug use due to a core symptom of depression being isolation or social withdrawal (American Psychiatric Association, 2013). Social withdrawal could explain why students experiencing symptoms of depression might not engage in a wide variety of risky drug use due to some substances being considered as 'social drugs' such as MDMA, Ecstasy, Ketamine or Speed, which are often consumed in social settings. Thus, social withdrawal might reduce the accessibility to a variety of substances. Further research comparing risky drug use within depressed students and students without symptoms of depression should be conducted to test this assumption.

Furthermore, the mean score of total depression within international students was 7.9, indicating that on average, international students are experiencing mild depression. This corresponds with research that international students are at increased risk for developing symptoms of depression, one risk factor being acculturative stress (Hahn, 2010; Smith & Khawaja, 2011).

As drug use was present in majority of international students, financially aided psychological assistance at universities should be accessible to students in order to assist them with academic stressors and other incongruences, in aim to reduce risky drug use. Additionally, international students would also benefit from financially aided psychological assistance at universities in order to reduce depression symptoms endured and to enhance the well-being of international students.

Some methodological limitations consisted of the frequency of risky drug use questionnaire not being a validated assessment tool. Instruments assessing general frequency of risky drug use could not be retrieved and therefore, one was created for this specific study. Thus, a coding method was also created. The coding of the frequency of risky drug use was not constructed on valid sources due to being unable to retrieve sources indicating what

consists of mild, moderate or severe frequency of drug use on a monthly or yearly basis. Moreover, this assessment tool consisted of various questions that were not used for the final analyses, due to the latter discovery that only data regarding risky drug use in the previous 30 days had to be included. The questionnaire solely asking about risky drug use in the previous 30 days would have been sufficient for this study. Therefore, having created a shorter questionnaire centering on drug use in the previous 30 days would have been more constructive. Moreover, in order to have a more precise total score of risky drug use for each participant, different answer options could have been provided, indicating a specific amount of drug use. For example, other than selecting a response of '10-19 times', one could have been given the opportunity to select an answer that specifies the exact amount of times a drug was taken such as '15'. In conclusion, the present study demonstrates that depression symptoms were not a moderator of risky drug use within international students experiencing acculturative stress. Additionally, acculturative stress was not associated to risky drug use.

Recommendations for further studies

Firstly, further studies should be conducted to test whether drug use is being used as a coping mechanism to other stressors such as academic stressors in aim to reduce risky drug use within international students. Secondly, further research comparing risky drug use within students experiencing symptoms of depression and students who are not should be conducted to identify differences in risky drug use within the two groups of students. For example, do depressed students engage in risky drug use with solely one or various substances? Do they engage in this drug use as a coping mechanism to reduce the depression endured? Does this [frequently using one substance other than various substances] increase the likelihood of developing a substance abuse disorder? Such research assists to expand our knowledge on risky drug use behaviors within international students, in aim to improve their quality of life.

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Appendix A. Recruitment texts.

"Hello everyone, I'm a Clinical Psychology student at Utrecht University and I'm currently conducting my master's thesis. I'm searching for participants that are willing to assist me. :) All I need is international university students!
I'd LOVE and REALLY appreciate your help.
Science too. :)

It takes approximately 10 minutes to complete.
Participate by clicking on this link: https://goo.gl/forms/wRYinm3w5Ub0RgLv1

Or by scanning the QR code.

Please do not be put off by the title of the survey, you don't need to be using drugs in order to complete this survey! EVERY international university student in The Netherlands is invited to participate.

:)
Thank you!

Best,
Mylene Heemstra

Appendix B. Informed Consent.

Dear participant,

I am a graduate (master) student at Utrecht University.

For my thesis, I am researching international students' experiences with relocating, their mood and drug use.

Because you are currently an international university student in The Netherlands, I am inviting you to participate in this research study. This can be done by completing the following survey. Please do not complete this survey if you are not an international student in The Netherlands either pursuing a Bachelor degree (WO), a Masters or PhD. This study does not include HBO or MBO students.

The following questionnaire will require approximately 10/15 minutes to complete.

It consists of three different sections:

1) Cultural questions 2) Drug use questions 3) Mood questions.

There is no compensation for responding nor is there any known risk. If you choose to participate in this project, please answer all questions as honestly as possible. Participation is strictly voluntary and you may refuse to participate at any time.

All information will remain confidential.

Some of the survey questions may evoke unpleasant emotions. If you want to talk about this, please contact my thesis supervisor Dr. Lot Sternheim at L.C.Sternheim@uu.nl

By clicking 'Yes', you give us your informed consent. This means that you are participating in this study voluntarily. You may then proceed with the survey. You may withdraw from the study at any time.

Thank you.

Kindest regards,

Mylene Heemstra

Appendix C. Debriefing

After completing the questionnaire, all participants were presented with a debriefing in which the aims of the

study are briefly explained.

"Dear participant,

Thank you for completing the survey!
Your cooperation is very much appreciated.
The aim of this study is to see whether depressive symptoms are a moderator of drug use within international
students experiencing acculturative stress.
With this survey, I was measuring your levels of acculturative stress, depressive symptoms and drug use.

If you would like any additional information, please don't hesitate to contact me at m.heemstra@students.uu.nl

All the best,
Mylene Heemstra"