

EXAMINING THE RELATIONSHIP AMONG PHYSICAL ACTIVITY, STRESS,
DEPRESSION, AND ANXIETY IN COLLEGE STUDENTS

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PUBLIC ABSTRACT

EXAMINING THE RELATIONSHIP AMONG PHYSICAL ACTIVITY, STRESS, DEPRESSION, AND ANXIETY IN COLLEGE STUDENTS

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Mental health challenges have been steadily increasing around college campuses, with consistent findings pointing to ethnic minorities and low socioeconomic groups adversely affected and needing more support than their counterparts. On the other end, physical activity (PA) has consistently been associated with positive mental health outcomes. Therefore, further understanding the relationship among race, socioeconomic status, and PA, as well as college students personal experiences on campuses, is of great importance to improve college student well-being. This two-study dissertation sought to address these relationships.

Study 1 evaluated differences in mental health across race, parental education (proxy for SES) and PA. Student obstacles to using on-campus mental health and PA resources were examined in a mixed methods design. Most of the data was collected prior to the establishment of COVID-19 restrictions at a large Midwest university. Mental health levels were anticipated to vary between the variables of race, parental education, and PA, which was partially supported. Results showed that low SES participants had significantly higher levels of depression, while PA was associated with lower levels of anxiety and stress.

Study 2 sought to replicate findings of study 1 and test the relationships within the context of a diathesis-stress model that includes PA using an expanded sample of students drawn from a large Midwest university and a smaller East Coast university. In addition to replicating study 1 findings, study 2 yielded several themes that revealed common obstacles of college students and how they overcome those obstacles. The hypothesized relationship among race, SES, PA and mental health was partially supported. Specifically, participants whose parents or

guardians had lower levels of education reported higher levels of anxiety, while there were significant differences in mental health across different levels of PA. The other goal of this study was to map the above relationship onto a PA moderating model, including variables of race, parental education, depression, stress, and anxiety, based on an adapted diathesis-stress model. This relationship was not supported by the data. Free response answers revealed interesting themes related to the college student experience and campus resources. Focus groups added to this through discussions on topics like the COVID-19 pandemic, mental health, and advice for future students. Data from study 2 was collected while COVID-19 pandemic restrictions were in place.

Overall results expanded knowledge on the experience of COVID-19 on college campus and the interconnection between race, parental education, PA, and mental health. Further social relations were important for student wellbeing. Students' also shared obstacles they faced with the use of on campus mental health and other resources.

ABSTRACT

EXAMINING THE RELATIONSHIP AMONG PHYSICAL ACTIVITY, STRESS, DEPRESSION, AND ANXIETY IN COLLEGE STUDENTS

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Although college campuses strive for diversity and inclusion of students of varying backgrounds, there are still a number of differences in lived experiences based on racial and socioeconomic status (SES). Literature shows that ethnic minorities and lower SES students experience significantly more mental health challenges during their college career than peers. Research has also identified benefits of physical activity (PA) on overall student well-being. In light of these findings, it is important to examine the relationship among PA and mental health across college students and if this relationship varies by race, SES, and level of participation in PA. Thus, this two-study dissertation examines this relationship, adding to the extant literature. The research also examines students' obstacles, awareness of mental health resources on campus and perceived barriers to utilization of those resources. Implications are discussed.

In study 1, pre-COVID-19 pandemic data was collected on participant demographics ($N = 493$; female = 60.9%; White = 77.7%), PA, levels of mental health, qualitative experiences, and obstacles with on-campus resources. The hypotheses that mental health levels are different between different groups was partially supported through t tests and ANOVAs. Specifically, mental health challenges were significantly higher for participants with lower parental education and for non-physically active students. A MANOVA found no interaction between race, SES, and PA in relation to mental health. Participants indicated obstacles with school/academics, social interactions, and balancing time. Different strategies to overcome obstacles ranging from relying on their own skills to increasing social interactions and using mental skills/activities were

utilized. They also mentioned obstacles with seeking on-campus resources, like personal reasons, bad experiences, and a lack of time. Perceived benefits of PA were identified.

Study 2 builds on study 1. It entailed enhanced demographic and qualitative questions, adding focus groups, a sample drawn from two universities, and testing an adapted diathesis-stress model for the relationship among PA, mental health and demographic variables. Data was collected during the COVID-19 pandemic and related restrictions ($N = 481$; female = 57.8%; White = 84.2%). Hypothesis one, regarding differences of mental health levels based on demographic variables, was partially supported through t test and ANOVAs. Hypothesis two, through structural equation modeling, that PA mediates the relationship between race, parental education, and mental health, within the framework of an adapted diathesis-stress model, was not supported. Like study 1, participants indicated school/academic, social interactions, and balancing time as the most common obstacles. Coping strategies included personal resiliency skills, increasing social interactions, and seeking professional help. Most indicated no barriers to on-campus mental health resources. Others stated that personal reasons for not seeking help and mentioned the COVID-19 pandemic as another barrier. To prepare better for college students would have mostly needed academic related education and better time management skills. Several benefits of PA were given. Focus groups discussed topics related to the college experience.

Findings from study 1 and study 2 revealed the impact of the COVID-19 pandemic on mental health for all students. The findings also showed differences in parental education and PA on mental health. Where these studies greatly enhance the understanding of the college student experience is through qualitative inquiry about the college experience and related aspects, which should be considered in efforts for improving student well-being around campuses.

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CHAPTER 1: GENERAL INTRODUCTION

Many college students in the United States (US) are struggling with mental health (Blanco, et al., 2008). This has likely been exacerbated by COVID-19 lockdowns and quarantines, limiting social interactions and outdoor activities. For students, extended periods of online learning would have created even more isolation and distress, all of which require high level coping strategies and resources. Research shows that students from marginalized groups are impacted even more by mental health related issues. Due to longstanding systemic, socioeconomic, and other forms of marginalization, racial minority students and those from lower socioeconomic groups suffer from mental health issues at a rate that is even higher than the national average (Arbona & Jimenez, 2014; Chin, Loeb, Zhang, Liu, 2020; Greer and Chwalisz; 2007; Karimshah, 2013; Reiss, 2013) which can progress into more severe psychopathologies. Therefore, there is need for a deeper understanding of the extent of mental health challenges faced by college students and potential mitigating strategies to address these challenges.

Almost 50% of college students suffer from psychological distress or distress related diseases (Deasy, Coughlan, Pironom, Jourdan, & Mannix-McNamara, 2014; Vazquez, Otero, & Diaz, 2012; Grzywacz, Almeida, Neupert, Ettner, 2004). Besides clinically diagnosed depression and stress, these include chronic illness and sleep difficulties (Dusselier, Dunn, Wang, Shelley II, & Whalen, 2005; Galatzer-Levy, Burton, & Bonanno, 2012), lower academic achievement, and poor physical health (Leppink, Odlaug, Lust, Christenson, Grant, 2016). Inadequate ability to cope with stress in college and a lack of resources has also been found to manifest itself in adverse behaviors like social isolation, alcohol use and abuse, and suicidal ideation (Drake, Sladek, Doane, 2016; Liu, Stevens, Wong, Yasui, Chen, 2019; Metzger et al., 2017). According

to a recent survey, a large majority of undergraduate college students have used alcohol. Amongst those, almost 20% require at least a brief alcohol intervention. Within the same survey, over 25% of undergraduates had an elevated risk of attempting suicide, while most screened positive for loneliness (ACHA, 2020). College students face a myriad of mental health challenges (Blanco et al., 2008; Deasy et al, 2014; Vazquez et al., 2012), like difficulty coping with various demands of college life, including academic work, financial independence, time management, social pressure, poor adjustment to college environments, and a sense of belonging resulting in distress (Darling, McWey, Howard, & Olmstead, 2007; Deasy et al., 2014, Gummadam, Pittman, Ioffe, 2016).

Ethnic minority students are adversely affected. Many report an increased pressure to fit in, as well as challenges with perceived and overt racism and repeated exposure to various forms of discrimination, all of which are linked to higher risk for several mental health issues (Bryant-Davis, 2007; Clark, Anderson, Clark, Williams, 1999; Griffin, 2006; Morales, 2008; Richman & Jonassaint, 2008). For instance, minority student athletes highlight a “pressure to succeed where others had failed” (p. 128) as a significant stressor (Kimball & Freysinger, 2003). Evidence suggests race and minority status inherently impose stress. This phenomenon has been referred to as “minority stress” (Smedley, Myers, Harrell, 1993). For instance, findings from a study by Arbona and Jimenez (2014) indicated that Latino/a college students showed a lower level of psychological well-being due to their minority-related stress, which is added to the already existing general college stress they perceive. Additionally, almost 50% of the participants in that study scored above the cut-off point “indicative of depression” (p.167), based on questionnaires addressing stress, minority stress, depression, and ethnic identity. Similar findings, regarding depression, have been made with Latino/a students attending a diverse and those attending a

predominantly White college (Wei, Ku & Liao, 2011). The more a participant identified as Latino/a, the higher their level of minority stress.

Similarly, Asian values in Asian-American and Asian international students were found to negatively impact well-being (Iwamoto, Liu, 2010), highlighting the difficulty one encounters when not “fitting in” with the majority. These students had elevated levels of depression and social anxiety, were more likely to be socially avoidant and distressed in social situations, and fearful of social evaluations, compared to European-American university students (Okazaki, 1997). Similarly, a strikingly large number of Black American participants, attending a predominantly White institution, showed significant levels of anxiety, stress, and other issues (Chao, Mallinckrodt, Wei, 2012). These scores were especially high in those who reported high levels of perceived racial or ethnic discrimination distress (PRDD), which over a quarter did report at minimum. This type of distress was strongly associated with procrastination for women and anger/irritability for men. Distress stemming from PRDD also multiplied sources of distress, like suicidal feelings, by up to 18 times. However, limited research has looked specifically at depression, anxiety, and stress in minority and low SES college students.

Overall, stigmatization, often accompanied by discrimination, can cause serious amounts of stress and negative adaptation (Major & O’Brien, 2005). Connected is the struggle of coping with this stressor. Problem-focused coping, often identified as more adaptive (Herman & Tetrick, 2009; Chao, 2011), as one seeks to actively overcome the problem, is usually not an option when dealing with very difficult or unsolvable obstacles (Noh, Beiser, Kaspar, Hou, & Rummens, 1999), like long-standing stigma and discrimination. The other coping option is emotion-focused coping. It is oftentimes the only option as it is impossible to actively overcome/avoid discrimination and stigmatization. Defined as adjusting one’s emotions to be less affected by a

stressor, it has been found to lead to hopelessness (Clements & Sawhney, 2000; Tokem, Ozcelik, Cicik, 2015).

Those of a lower SES have distinct obstacles, which in some cases relate to those of minorities. Cohen, Doyle, and Baum (2006) identified a relationship between SES and biological markers for stress. Individuals with a lower SES had higher levels of cortisol, epinephrine, and norepinephrine. A study of African American college students (Salami & Walker, 2014) found that hopelessness partially mediated SES and depression, and fully mediated SES and anxiety. Surprisingly, the authors found that higher SES was positively related to anxiety and depression in the same population. Other research found low SES individuals experiencing more severe stressors and a higher vulnerability to those stressors (Grzywacz et al., 2004). Those with low SES had less but more severe stressors than participants with high SES. Additionally, there was a positive association with number of stressors and physical symptoms. Those with a low SES indicated an increase in rate of physical symptoms, like headaches or lack of appetite, compared to higher SES groups. The higher SES groups showed more symptoms in total but better physical and mental health. More sobering is the relationship of minority status and low SES. Although Asians, on average, have a higher SES compared to Whites, based on education and median household income (US Census Bureau, 2010), they still have worse levels on mental health indicators. However, Blacks and Hispanics have a significantly lower average SES compared to Whites on both education and median household income variables, while also having higher levels of negative mental health indicators based on their minority status, highlighting their added susceptibility to negative well-being. Similarly, Akhtar-Danesh and Landen (2007) found that individuals with lower levels of education, often used as proxy for SES, as well as divorced

individuals and immigrants, have higher levels of depression. This was also found in relation to anxiety and level of education (Bjelland et al., 2008).

Most US college campuses have programs and services to mediate mental health challenges faced by students as well as programs to enhance student health and wellness. Examples are counseling and psychiatric services, offered through campus health units and student services, as well as campus recreational programs. However, there seem to be barriers that limit the use of these programs and services. There is paucity of research examining these barriers, particularly the role of physical activity (PA) and sport on managing depression, anxiety, and stress, as well as how these relate to demographic factors such as gender, race, ethnicity, and socioeconomic status (SES). Given the well-established disparities between groups and their varying impacts on the well-being of students, it is important to understand their unique challenges and identify additional ways to mitigate these effects across university student populations. It is especially important to identify these impacts on racial minorities and low SES students. PA is an important variable to evaluate in this relationship due to established evidence of its positive effects on mental health. Participation in PA has been found to lead to significant benefits to mental health across populations (Adams, Moore, & Dye, 2007). This has led to a growing interest in the role PA plays in reducing levels of depression, anxiety, and stress across different groups, and how it interacts with various demographic variables such as age, gender, ethnicity, and SES. Understanding students' experiences about their use of on-campus recreational and mental health resources and how this is likely to lead to improvements in PA behaviors, health, and wellbeing remains a topic of much interest.

Statement of the Problem

While there is significant research evidence showing the relationship among well-being, race and SES, fewer studies have examined these variables in relation to mental health indicators like depression, anxiety, and stress. The biggest challenge with understanding and seeking to address the relationship between race, SES and mental health are the complex historic and systemic factors that underlie this relationship. Individuals cannot simply seek help to relinquish their SES or racial background. Therefore, finding adequate coping strategies to support mental health remains key. PA is one of those potential strategies, although there is limited data examining participation in college PA, across race and SES, and how that affects individuals' mental health. Intercollegiate athletes find sport participation to be both a source of (e.g., busy schedule, missing class) and buffer against (e.g., physical activity to release stress) distress. Overall, however, student-athletes report less issues with depression and anxiety compared to non-student athletes (American College Health Association, 2008, as cited in Davoren & Hwang, 2014). Additionally, Proctor and Boan-Lenzo (2010) indicated that their finding of student-athletes significantly lower levels of depression compared to non-athletes could be explained by the "immediate outlet to release stress" (p. 214), as well as the persistent and "strong social support network" (p. 214) associated with sport participation.

Students participating in recreational sports identified improved wellbeing, health, stress management, self-confidence (NIRSA, 2004), and concentration as part of the top ten benefits of participating in PA (Forrester, 2014). Additionally, a large majority of those students indicated that participation in PA increased skills like time management, academic performance, sense of belonging/association, ability to develop friendships, problem solving and persistence (Sturts &

Ross, 2013). Notably, heavy PA participants have similar academic concerns as other students, while being happier overall (NIRSA, 2004).

Purpose of this Research

Therefore, the purpose of these studies, beginning with study 1, was to examine the relationships among race, SES, PA, and depression, anxiety, and stress levels. Additionally, open-ended questions examined obstacles university students faced with use and access to programs and services and ways to improve usage, effectiveness, and efficacy of on-campus resources for student well-being. Study 2 added to this information by broadening recruitment, involving athletes, recreational sport participants and non-participants from a large and medium sized university in two states. This allowed examination of contextual similarities and differences in these relationships. Study 2 also collected qualitative data aimed at developing a more nuanced understanding of students experiences relative to the hypothesized relationship among PA, race, SES, depression, anxiety, and stress levels. Expanding participant recruitment to a combined eight different departments (kinesiology, psychology, athletics, and recreational sports) across two different universities allows for a much more diverse sample and generalizability of the study's results. To build on specific open-ended responses, the connection between the above-mentioned variables and obstacles, experiences and opinions with on-campus resources, and perceived benefits of PA will be analyzed. Open ended questions of study 2, housed under the College Experience Questionnaire, are informed by study 1 and will evaluate university students' experiences across different domains. Focus groups added further information on these aspects as participants shared their own experiences and thoughts in richer detail, in addition to survey responses.

The information gained from these studies not only adds to the literature regarding mental health across demographics in university students but should also aid in future improvements of on-campus resources. Having a better picture of the relationships between demographics, PA, and mental health is necessary for future research as well as for a much better understanding of the college student experience. Adding qualitative inquiry, specifically about student experiences, only furthers this understanding.

Theoretical Framework

The diathesis-stress model (Bleuler, 1963; Rosenthal, 1963) (Example in Figure 1) was chosen, and adapted, for study 2. This model posits that an individual's predisposition to psychopathology is activated by a stressor (Monroe, Simons, 1991). That is, individuals are more likely to develop mental health disorders due to hereditary or genetic factors that become activated based on environmental stressors. Predisposition to psychopathology alone is not enough to result in the development of a disorder. It is the combination of the right amount of stress with a predisposition which leads to psychopathology. Well-established with schizophrenia, the diathesis-stress model indicates that, based on certain predispositions, too much exposure to a stressor may bring about schizophrenia and may worsen schizophrenic symptoms (Walker, Diforio, 1997). In addition, certain diatheses can increase the impact of that stressor on a person (like the perceiving of a stressor based on SES, discussed in the literature review). An example of such an illustration can be found in figure 1. In study 2, the predispositions, or diatheses, are the independent variables of race and SES, measured by the demographic questionnaire. The "psychopathologies" are the dependent variables, levels of depression, anxiety, and stress, measured by the DASS-21 (Lovibond & Lovibond 1995). These, as discussed in the literature review, could lead to issues like chronic illnesses, lower academic

achievement, and suicidal ideation. The stressor potentially activating the predisposition would be the unmeasured environment of attending university. Such stressors could be related to academics, minority status, or finances, to name a few. However, in study 2, PA will substitute the “stressor” and serve as a beneficial method to improving mental health. It will serve as a mediating variable between the independent variables of race and SES and the dependent variables of depression, anxiety, and stress, with higher levels of PA contributing to lower levels of depression, anxiety, and stress and vice versa. Ethnic minority students at a majority white university, coming from a lower SES, not participating in PA, are expected to have an increased risk for depression, anxiety, and stress. A path model demonstrating how this framework will be used in this study is presented in Figure 2.

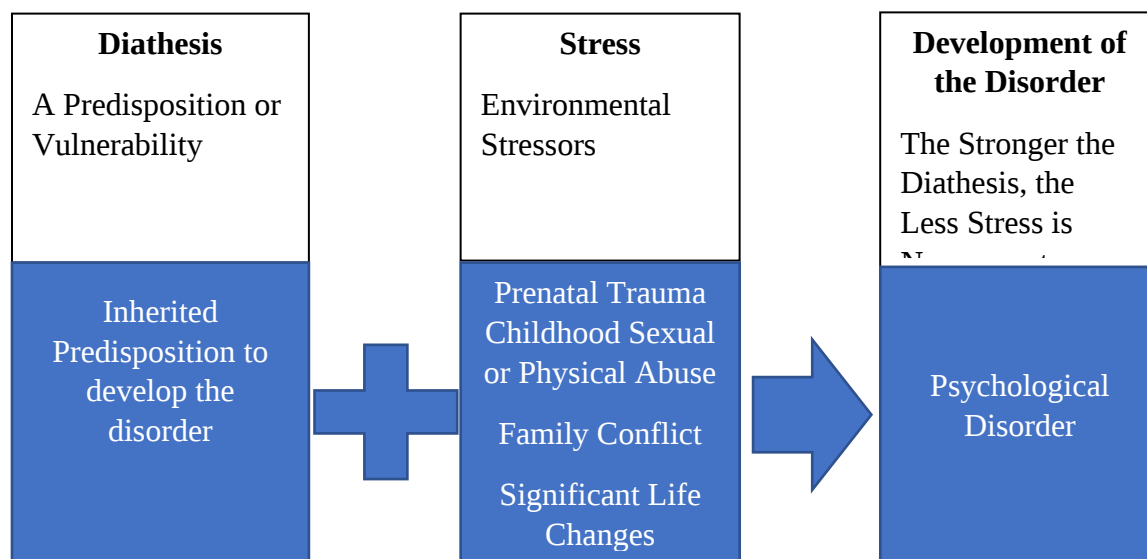


Figure 1 Diathesis-Stress Model for Schizophrenia (Adapted from Yr 2 Wk 8 – Interactionist approach to schizophrenia (2020, May 10))

Several studies have looked at components of this proposed framework, however, few have examined the mediating effects of PA in the context of a diathesis model. To this authors knowledge, only one study used the diathesis-stress model in connection to PA. This sport-

specific diathesis stress-model (Nixdorf, Beckmann, & Nixdorf, 2020) posits that the development of depression and burnout relate to stressors during a given time. The authors identify that the process of “important personal (e.g., cognition, attitudes, and strategies) and environmental factors (e.g., stressors) would lead to depressive syndromes, burnout or both” (Nixdorf, et al., 2020, p. 5). What sets the current framework apart from others is the inclusion of a potential beneficial component in relation to mental health outcomes, by using PA as mediating variable.

CHAPTER 2: STUDY 1 PHYSICAL ACTIVITY PARTICIPATION AND STRESS IN COLLEGE

Abstract

Race and low socioeconomic status (SES) have been identified as adding to mental strain across populations. University students, already exposed to numerous stressors, are additionally adversely affected due to a combination of these demographics. Physical activity (PA) has been associated with improved mental health but its role in moderating the effects of stress and anxiety among college students has seldom been investigated. There is a need for more of this line of research given the significance of mental health challenges on college campuses. The current study sought to examine the relationship among PA, stress, depression, and anxiety in college students. Mental health data was collected using the DASS-21. Participants also completed open ended questions about experiences and use of mental health resources on campus. Participants were 579 college students from a large Midwestern university (M age = 20.73; 60.9% Female; 77.7% White). Results showed that ethnic minorities and low SES participants had significantly higher levels of depression, while PA was associated with lower levels of anxiety and stress. Findings are in line with what has been reported in the literature. Qualitative results highlight several aspects that could be addressed on university campuses while suggesting methods of improving the usability and effectiveness of on-campus resources. Future research should examine nuanced student mental health disparities and mediational effects of on-campus recreational programs.

Introduction

A systematic review by Storrie, Ahern, and Tuckett (2010) shows the rising mental health issues that university students face. Not only did they find that almost 50% of all mental illnesses begin in college but an alarming number of students with issues do not seek professional help. Racial/ethnic minorities, amongst other obstacles, must additionally contend with racial discrimination (Carter, Lau, Johnson, Kirkinis, 2017) and a lacking sense of belonging (Gummadam, Pittman, Ioffe, 2016), adding to their negative mental health, while the perceived need for mental health treatment is significantly lower (Breslau, et al., 2017). Finally, SES has been found to generally have a negative relationship with mental health (Reiss et al., 2019). Similarly, higher parental education for black students had less of a positive effect on their mental health compared to parental education for white students (Assari, 2018). Methods to improve mental health in all university students, and specifically in marginalized students, is needed. PA has often been hailed as one such positive method of improving mental health (Petruzzello Box, 2020).

These findings indicate the benefits of PA on coping with some of the manifestations of stress many college students face. Yet, constraints exist, including a lack of time due to competing responsibilities, a lack of awareness of available PA options, and to a lesser extent, a lack of enjoyment of PA (Young, Ross, Barcelona, 2003). Results from a study on recreational participation indicated that various demographic factors, including being of minority status, female, of low SES, and/or elderly, were the main constraints for PA engagement (Shores, Scott, Floyd, 2007). Despite the overwhelming evidence that links regular participation in recreational sport programs with mental health and well-being, there is limited research that looks at this relationship among college students. Additionally, limited research has examined students'

perceived benefit and reason for participating in PA. Examining this relationship in the general student population and distinguishing by race and SES will offer novel insights. Additionally, despite studies showing some promise on the relationship between sport participation and better mental health in college students (E.g., Forrester, 2015) little research has been done with a specific focus on depression, anxiety, and stress in connection with demographic variables, while including a variety of different levels of sport participation (intercollegiate, intramural, club, etc.). Specifically, research looking at a combination of race, parental education level (proxy for SES) and PA in relation to well-being remains sparse.

There are other factors that may affect a person's level of depression, anxiety, and stress, which are not covered in this study. The RESPECTFUL Model (D'Andrea & Daniels, 2001), primarily used in counseling, is ideal when considering these factors. It posits that some factors may have a much stronger effect on one's mental health based on persistent discrimination, abuse, or lack of support. This would likely be represented under the Trauma (Threats to one's personal well-being) category. Exposure to more traumatic experiences is associated with increased amounts of symptoms of post-traumatic stress disorder and depression, but not stress, in children from Cape Town (Suliman et al., 2009). Looking at childhood trauma in adults, Huh and colleagues (2017) found that maladaptive coping, more common in participants with greater childhood trauma, "mediated the relationship between early life traumatic experience and current depression/anxiety symptoms" (p. 47). The authors also indicated that maladaptive coping could be underlying the relationship between childhood trauma and adult depression and anxiety symptoms. This is an interesting observation when looked at in the context of the current study, as adequate resources, even at college age, may aid in establishing adaptive coping mechanisms.

Based on the literature, the purpose of this study was to examine if PA was associated with levels of depression, anxiety, and stress, and if this relationship varies by race and SES. The study sought to address the following research question: “Does depression, anxiety, and stress vary among PA and demographic variables?” A demographic questionnaire and the DASS-21 (Lovibond & Lovibond, 1995) were used to evaluate the hypothesized relationships of:

1. PA is associated with lower levels of depression, stress, and anxiety.
2. Ethnic minority, males, students with low socioeconomic backgrounds, and those who are not physically active have the highest levels of depression, stress, and anxiety.

Furthermore, open-ended questions were posed to identify common university student obstacles, experiences with on-campus resources, personal skills, and the perceived benefit.

Methods

Participants

Participants were 579 university students aged 18 and over ($M = 20.73$, $SD = 1.77$) from a majority white, large midwestern university in the United States, with more than 40,000 students. The sample consisted of undergraduate (89.3%) and graduate students (10.5%), with the racial makeup divided into white (77.7%) and non-white (22.3%), and 60.9% identifying as female. A further breakdown of participant characteristics can be found in Table 1. Out of 579 responses, 493 were used in analyses due to completed data.

Table 1 Participant Characteristics

Participant Characteristics		
	Overall	Percentage
Year in school		
1 st year	84	17
2 nd year	92	18.7
3 rd year	79	16
4 th year	152	30.8
5 th year or over	33	6.7
Graduate Student	52	10.5
Gender		
Male	189	38.3
Female	300	60.9
Race		
White	383	77.7
Non-White	110	22.3
PA Type		
None	295	59.8
Club sports	44	8.9
Intramural Sports	154	31.2
Parental Education		
High School or Lower	39	7.9
Post High School	234	47.5
Graduate and Above	220	44.6

Measures

Demographic information Questionnaire (Appendix B)

A demographic information questionnaire was developed by the investigators to collect background information, such as age, race, year of study, activity level, ethnic identity, and parental education. Parental education was used as a proxy for SES.

Depression, Anxiety, and Stress (Appendix C)

Depression, anxiety and stress were assessed using the Depression Anxiety Stress Scale - 21 (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is the short version of the DASS-42 (Lovibond & Lovibond, 1995). It measures levels of depression, anxiety, and stress. The scale has been shown to have good internal consistency with a Cronbach's alpha of .94, .91, and .87, respectively (Antony, Bieling, Cox, Enns, Swinson 1998). The current study revealed Cronbach's alpha for each of the subscales at .91, .86, and .80, respectively. The scale is based on a 4-point Likert scale, ranging from 0 ("Did not apply to me") to 3 ("Applied to me very much or most of the time"). Sample questions for subscales of depression, anxiety and stress are "I felt that life was meaningless", "I found it hard to wind down" and "I was worried about situations in which I might panic and make a fool of myself", respectively.

Open-ended Questions (Appendix D):

Participants completed open ended questions to discuss obstacles they have faced since entering college, how they overcame these obstacles and the kinds of resources available to help them overcome those obstacles. Further questions asked about obstacles to seeking help, skills that could have prepared one for university, motivations, learned beneficial psychological skills, and the perceived benefit of PA participation.

Procedure

Upon approval by the Institutional Review Board, a snowball sampling technique was used. This allowed for a larger distribution. The investigator distributed recruitment emails to physical activity course instructors in the Kinesiology department, as well as to the club sports and recreational sports and fitness services department, to be forwarded to their students.

Additionally, the investigator attended several kinesiology classes to speak about the research and answer questions. Recruiting emails included a brief description of the study, information about response anonymity, and rights of participants to decline without penalty, followed by a link to the online questionnaire. Participants had to be 18 years or older to take part in the survey. The entire survey was done online through Qualtrics. Participants were led to the questionnaire items after selecting an 'agree to participate' option at the end of the introductory message. The survey was available from February to April 2020. To protect participants identities, no personal identifiers were reported.

Data Analysis

The data was analyzed using the Statistical Package for the Social Sciences (SPSS, version 27). For hypothesis one, independent samples t-tests were conducted to compare the subscales of depression, anxiety, and stress in race; one-way analysis of variances (ANOVAs) were conducted to compare levels of SES on the subscales of depression, stress, and anxiety, as well as to compare PA levels on the subscales of depression, stress, and anxiety. For hypothesis two, multivariate analysis of variance (MANOVA) was used to examine levels of depression, stress, and anxiety by gender, race, parental education and PA. Qualitative data from surveys and focus groups were analyzed using content analysis approach (Saldaña, 2011) whereby participants' responses for manifest and latent meanings were coded.

Results

Quantitative Results

Race and Mental Health Indicators

To identify race differences and mental health, independent samples t-tests were conducted on the subscales of depression, anxiety, and stress. Results showed no statistically significant race difference on depression, ($t(143.98) = -1.36, p = .176$), across White ($M = 3.50, SD = 4.22$) and non-White ($M = 4.24, SD = 4.94$) participants. The difference between the race groups was also not statistically significant for anxiety ($t(446) = -.99, p = .324$), White ($M = 3.37, SD = 3.56$) and non-White ($M = 3.78, SD = 3.76$) participants, or stress $t(445) = -.45, p = .651$, White ($M = 5.63, SD = 4.45$) and Non-White ($M = 5.86, SD = 4.94$) participants.

Parental Education and Mental Health Indicators

To identify differences on mental health by socioeconomic background, one-way ANOVAs were conducted to examine if parental education is associated with depression, stress, and anxiety. There was a statistically significant difference on levels of depression by SES, ($F(2,454) = 5.83, p = .003$). Post hoc comparisons using the Tukey HSD test revealed that levels of depression were significantly higher for participants who come from households where none of the parents had more than high school education ($M = 6.00, SD = 6.00$) compared to those from households where at least one parent had a post high school education ($M = 3.59, SD = 4.22, p = .01$) or had graduate education ($M = 3.33, SD = 4.14, p = .001$). No difference was found between post high school and graduate education levels. The differences between anxiety ($p = .66$) and stress ($p = .64$) were not statistically different.

Physical Activity and Mental Health Indicators

One-way ANOVAs were run to compare PA types as predictors of depression, stress, and anxiety. Analyses revealed a statistically significant difference of types of PA at the $p < .05$ level for depression ($F(2,454) = 4.29, p = .014$), anxiety, ($F(2,445) = 12.52, p < .001$) and stress, ($F(2,444) = 7.54, p = .001$). For depression, post hoc comparisons using the Tukey HSD test revealed that levels of depression were non-significantly higher for individuals not engaging in organized PA ($M = 4.13, SD = 4.60$) compared to Club Sport ($M = 2.44, SD = 4.46, p = .55$) and Intramural Sport Participants ($M = 3.12, SD = 3.84, p = .65$). There was no significant difference between Club Sport Participants and Intramural Sport Participants ($p = .65$). For anxiety, Tukey HSD test revealed that levels of anxiety were significantly higher for individuals not engaging in organized PA ($M = 4.15, SD = 3.94$) compared to Club Sport Participants ($M = 2.40, SD = 3.30, p = .01$) and Intramural Sport Participants ($M = 2.47, SD = 2.61, p < .001$). There was no significant difference between Club Sport Participants and Intramural Sport Participants ($p = .994$). Regarding stress, Tukey HSD test revealed that levels of stress were significantly higher in individuals not engaging in organized PA ($M = 6.32, SD = 4.81$) compared to Club Sport Participants ($M = 4.03, SD = 4.25, p = .012$) and Intramural Sport Participants ($M = 4.86, SD = 3.88, p = .005$). Again, there was no significant difference between Club Sport Participants and Intramural Sport Participants ($p = .59$).

Relationship among Gender, Race, SES and PA on Mental Health Indicators

A two-way MANOVA was used to analyze the association between gender, race, educational background of parents, and PA with levels of depression, stress, and anxiety. No statistically significant interaction effects were found. An examination of main effects showed statistically significant effect for gender on stress, $F(3, 350) = 4.13, p < .01$; Wilk's $\Lambda = .97$.

Follow-up independent samples t-tests revealed that females had statistically significantly higher levels of stress ($M = 6.32$ $SD = 4.62$) compared to males ($M = 4.59$ $SD = 4.18$), $t(442) = 3.99$, $p = < .001$. No other statistically significant effects were found for depression and anxiety.

Table 2 Descriptive Statistics of PA, Gender, and Race by DASS-21

Variable	Type of PA	Gender	Race	M	SD	N
Depression	Neither	Male	White	3.20	3.79	55
			Non-White	4.71	5.31	21
			Total	3.62	4.28	76
		Female	White	4.57	4.99	122
			Non-White	3.24	4.03	33
			Total	4.29	4.82	155
	Club	Male	White	0.89	1.17	9
			Non-White	2.57	3.21	7
			Total	1.63	2.36	16
		Female	White	3.00	5.83	12
			Non-White	1.33	1.53	3
			Total	2.67	5.25	15
	Intramural	Male	White	2.85	3.98	53
			Non-White	3.44	4.10	9
			Total	2.94	3.97	62
		Female	White	2.80	3.16	51
			Non-White	2.50	3.03	10
			Total	2.75	3.11	61
Anxiety	Neither	Male	White	3.49	3.84	55
			Non-White	5.29	4.63	21
			Total	3.99	4.12	76
		Female	White	4.53	3.94	122
			Non-White	3.88	3.87	33
			Total	4.39	3.93	155

Table 2 (cont'd)

Stress	Club	Male	White	1.56	1.67	9
			Non-White	3.00	3.42	7
			Total	2.19	2.59	16
		Female	White	3.17	5.01	12
			Non-White	1.67	1.15	3
			Total	2.87	4.50	15
	Intramural	Male	White	1.64	1.77	53
			Non-White	2.22	2.77	9
			Total	1.73	1.93	62
		Female	White	2.90	3.09	51
			Non-White	3.10	2.42	10
			Total	2.93	2.98	61
	Neither	Male	White	5.02	3.88	55
			Non-White	5.43	4.74	21
			Total	5.13	4.10	76
		Female	White	6.69	4.84	122
			Non-White	6.18	4.88	33
			Total	6.58	4.84	155
	Club	Male	White	1.11	1.17	9
			Non-White	3.71	4.19	7
			Total	2.25	3.09	16
		Female	White	5.83	5.27	12
			Non-White	5.00	4.00	3
			Total	5.67	4.92	15
	Intramural	Male	White	3.58	3.00	53
			Non-White	4.00	3.64	9
			Total	3.65	3.07	62

Table 2 (cont'd)

Female	White	5.63	3.62	51
	Non-White	4.90	3.45	10
	Total	5.51	3.58	61

Qualitative Data of College Student Experience

Qualitative analysis was used to evaluate responses on what obstacles students faced since entering university, what methods have aided in overcoming these obstacles, what on-campus resources should have been available and what on-campus resources helped, reasons for not seeking help, what could have prepared students better for university, what motivates them to be successful, and what psychological skills they have learned and how PA has benefitted them.

Obstacles related to being a university student

The first open-ended question asked about the obstacles that participants faced since entering university. The most prevalent obstacle for participants was school related. Many participants gave very short responses like, “Getting good grades”, “Final(s) week”, or “Writing a dissertation”. One student’s obstacle was “Getting used to college course work”. There were several that had similar issues or ideas regarding the specific adjustment to college. One female participant who identified herself as an international student had this to say about her adjustment: “When I first had group work in the second year of college, I didn’t know how to communicate with group members”. This quote includes the second most prevalent response across all participants. This not only highlights academic related struggles but also social struggles that both domestic and international minoritized students are likely to deal with.

Many students move away from home for the first time in their lives, they may attend a university without many of their friends joining them and end up sharing a room with a stranger,

to name a few social related obstacles. This level of striving to fit in was highlighted by responses like “making friends”, “have good relationships”, “trying to find friends”, “meeting new people”, and “not feeling included”, but also go deeper like “social pressure” and “fights with friends”. This suggests significant challenges with college adjustment or fitting in.

The next most common obstacle was balancing time between different obligations, like school, work, and friends. Many individuals reported this with some of the other codes, of course. Oftentimes, participants seemed to struggle with finding the correct amount of time to spend on each of their obligations. These responses often included a combination of codes, like family and school, highlighted by “Balance life between family, school, and work. I always felt that I was letting someone down at all times”.

Strategies to overcoming obstacles

Students were also asked to share the strategies they used to overcome obstacles to their college adjustment. Sadly, but also somewhat inspiring, most participants dealt with the problem on their own. Regarding money, one participant said, “My most stressful obstacle, money, since I did not receive any scholarships to come to (large university) was overcome by just kind of sitting back and realizing this is an experience and money isn't the end of the world”. Other students related it back to academics and how they changed their own behavior to adjust to the demands or found ways that worked best for them: “Sitting down and planning things out for myself in a planner”.

The second most stated adjustment strategy was increasing social interactions. One white, female student stated that, “I surrounded myself with a good support system. Living in the dorms really helped me build a great group of friends and I don’t know if I would have gotten through that tough time during freshman year if it wasn’t for them”. One individual combined the benefit

of social support with a very specific self-supplied small reward, namely “Family and Betty Crocker dark chocolate brownies”.

The third most common strategy dealt with the use of several mental skills/activities, commonly addressed in the field of psychology and kinesiology as “self-reflection”, “prioritizing”, avoiding rumination, “yoga and meditation” as well as self-care like, “Taking time to exercise, get sleep, and eat healthy”.

What mental health resources should be available to students?

The following responses came from individuals who indicated that they were able to overcome mental health challenges. The question asked related to what resources should have been available to overcome your obstacle. The most common code regarding beneficial resources on-campus dealt with a lack of knowledge about resources as indicated by, “I'm not really sure what resources help people with depression. A strong support network? But that can't really be provided through an institution.” This quote also addresses a sub-theme of individuals not being aware of what resources could help with their obstacles.

Second was the need for more availability of already existing academic resources as shown by “More people to help in help rooms often times I would only get help once because there was only one person there to help”. Others not only indicated obstacles but also more specific ideas for improvement like, “I think if there were more online chat rooms to ask questions out to the whole class. It would be easier than trying to go across campus to find a help room or office hours” and “I think that we should have more check-ins by RAs in the residential halls and also by professors of first-year students to ensure that they are having a good transition to college”.

The third most common code dealt with individuals indicating that there was either nothing wrong with on-campus resources or they were indicating that some necessary resources did not exist. Unfortunately, these exclusively one-word responses like “no” or “NA” cannot be discerned from each other.

Resources and their availability

The following responses came exclusively from participants who were unable to overcome their most stressful obstacle. Participants were instructed to indicate potentially beneficial resources and if those were available to them. Most discussed resources were general, meaning outside of academic, money, social, or other related resources. Many indicated the counseling center and it being available: “Counseling center and yes”; “The counseling center would have been able to help”. Although, some indicated the lack of availability as shown in the following:

The counseling center would be a good step to overcome my obstacles. It is not available in the time in which I am free though” and “Counseling and therapy, but I don't have the money nor the support to get professional help.

Some also gave suggestions for improvement, “I wish there was a way for the health center to help connect students with outside clinics for the services that they cannot provide”. Other addressed resources included the “financial aid office” and “personal trainer or dietician”.

Academically related resources followed, with examples of professors, academic advisors, and teaching assistants. Participants generally indicated that these resources were available, as indicated by “Advisors to help plan. Yes, they were available”. On the other hand, some indicated concerns with these resources, “Ask (teaching assistant) for help. Not really helpful. They seldom reply (to) email promptly”. Finally, one participant had a clear idea of

where their struggles with academic help come from: “I think if I was comfortable enough to speak to my professors that I would have an easier time understanding material, therefore making studying easier.”

The third most common code under this prompt related to students being unaware of resources. Based on a negative outlook on life, one participant mentioned “I honestly don't know what I can do to escape my issue.” Another student struggling with social aspects like public speaking and meeting new people indicated that “Nothing is available that I'm aware of”. Many responses related to resources that are actually available on campus, like the counseling center. However, it is unclear if students were not aware of their existence or did not feel comfortable seeking out those resources.

Obstacles to seeking help

One of the most important questions asked dealt with why participants may refuse to seek help, which all participants were able to respond to. The most common codes here were personal reasons for not seeking help. These reasons can be broken down into categories of (1) stigma/deal with it by oneself, (2) being uncomfortable, (3) the problem being insignificant, and (4) diversity. Examples are as follows: (1) “I think the stigma surrounding mental health definitely puts a damper on individuals who think they need help but will not go. Especially feeling like I didn't have much to be sad or anxious about because I have a good life and I am able to attend college”; (2) “I was mostly just scared to talk to another person about my situation”; (3) “I'm also not sure if I actually need help; and I would never want to take a time slot away from someone who does need it when I'm not sure if I do”, “my school is so big and there are worse problems than mine”; (4) “Being a person of color can be challenging when most authority figures (advisors, PI, professors, etc.) are white on campus”, “As an international

students (*sic*), I am kind (of) afraid to express my feeling to other people.”, “On the behalf of intersex people, I think it’s hard to talk about it”.

Having bad experiences with services or having friends who had bad experiences was the second most prevalent code. Most of these comments related to the counseling center and how individuals had bad experiences based on long waiting times, also mentioned above. Other experiences include negative interactions with personnel, as shown in this statement with a situation at the health center: “All of my friends have negative experiences with (the health center) and (counseling center). Due to my bad experience and those of my friends, I decided not to go back.”

The next code is very straightforward and deals with a lack of time to seek help, as explained by “Feeling as if I didn’t have time to go”, “If I want to go to office hours I can never find time because my days start at 8 am and end at 6 pm everyday”, “I sometimes do not want to seek help from school because my schedule is so busy and I also have to commute from home, so it is not very convenient”.

What could have prepared you better for university?

This next question asked participants if there was anything that could have prepared them better for life as a university student. The most common code dealt with students feeling like they needed more academic preparation. This came in a few different forms. Students wished to know “what classes would actually look like, the course load, rare extra credit or none at all”. Other responses included “More independent and guided research, (...) writing classes”, “online preparation” for classes, being aware “that it is okay to not have everything planned out from the very beginning,” and understanding “a day in the life of the college student”.

Surprisingly, the second most common code came from participants who felt well-prepared for college. One quote addresses this but also gives advice for less prepared students, “I feel that I transitioned very easily from high school to college, but I would say for those who may not be as fortunate that it is important to learn how to manage your time wisely, how to schedule your day, take care of yourself in regard to health, diet, etc, and to understand that you may need to put more effort into your schoolwork than you did in high school”.

The third most common code was relating to social interactions. In general, students indicated that they wished to have been more prepared to make friends and form a support system, “I wish that I had spent more time pushing myself out of my comfort zone and working on my social skills. I found it really hard to connect with people because I was scared to put myself out there at first”. One student summarized it well in relation to what they have seen and how they felt, “I think making friends has been one of the most common issues people have struggled with. I have a little bit. It's hard to find your group with such a large student population and such a large campus”. One can see the connection between these responses and the those of the first open-ended questions (obstacles related to being a university student—social).

Motivation to be successful in college.

This section is in response to a question asking what motivated participants to attend college and be successful in college. The most common answers were the outlook of having a good job, which oftentimes connects with other codes like, “provide for my family”, “successful career”, “go into a field that I am passionate about”, “support myself”. Responses included, “hope that I can make a difference in the world” and:

I want to establish generational wealth for my future family. I know that not only will my life be better with a secondary degree but my education has implications

for my future children and I want to do all that I can to make sure I am setting them up before they get here. I also want to show my extended family that their blood sweat and tears to give me a better life was worth it.

Similarly, support from others or for others was the next most common code as indicated by, “I want to do well in school for myself and my parents. I want to make them proud”, “I want to be successful, make myself proud, make parents proud”, “My mother, she deserves it all”.

Having a successful future, not addressed by a job, was third. Here, individuals were motivated by the overall long-term benefit that college could give them, as shown by “Having a good future”, “My future self and stability”, “To find what I want to do in the future”, “My biggest motivator is my future”.

Staying motivated through tough times

When asked how participants stayed motivated through tough times, most indicated the benefit of social interactions. Many responses are similar to “Your friends will usually have your back. Especially if you have that class with them, most students are looking to succeed. Work together with them, exhaust all of the resources at your disposal. (Large university) wants the students to succeed as well” and “I have tried therapy in the form of talking to a therapist a few times. However, I found it ineffectual and have preferred to lean on friends and family to talk and work through things. My motivation to live life to the fullest is my loved ones, so that is what I go to when times are tough”.

Second was the ability to look past the difficult times as shown by “I think about how fun it’ll be after” and “I think about my end goal. Knowing where I want to be and how I can get there is enough, most of the time”, as well as one participant hinting at reflection “Just knowing that if I want to be successful, there are going to be bumps in the road and to stay positive”.

Interestingly and reassuring is the fact that participation in PA was the third most common code. Many broadly mentioned participation in PA (e.g. “Listen to music and dance”, “Sports”, “Go and lift weights”), as well as a combination with art. Others were more specific as indicated by “Being in a club sport has helped a lot to stay motivated, because I am around highly motivated, supportive people a lot” and “I would workout to release tension and helped me to relax a little. This helped keep me motivated to do well in school. I also thought about my future and who I wanted to be”.

Psychological skills and the benefit of PA

The final two questions addressed any psychological skills that individuals had learned, as well as how PA has helped with their daily stress. Due to the straightforwardness of the responses the top three codes are listed in order. For psychological skills, the top three codes were (1) breathing techniques, (2) focusing on oneself, and (3) having a positive mindset. For the benefit of PA, the top three codes were (1) being away from stress/being in the moment, (2) release of stress or other negative emotions, and (3) social interactions.

Discussion

This study evaluated several factors which have previously been associated with mental health and found multiple significant and interesting results. Overall, the findings added to the literature by highlighting the differences in mental health solely based on predetermined characteristics, like SES (Cohen, Doyle, Baum, 2006; Grzywacz, Almeida, Neupert, Ettner, 2004; Meyer, Castro-Schilo & Aguilar-Gaxiola, 2014; Reyes & Yujuico, 2014). Additionally, it supported previous findings on the benefits of physical activity on mental health (Armstrong & Oomen-Early, 2009; Elkins, Forrester, Noël-Elkins, 2011; Kanter, 2000). The results indicate that parental education is associated with mental health while PA remains one of the viable

pathways to enhancing mental health. However, questions remain about specific ways in which depression, anxiety, and stress manifest in the context of race and SES.

Discussion of Analysis

Race and Mental Health Indicators

In relation to race, none of the mental health levels were significantly different, although the results showed that minorities, compared to whites, have non-significantly higher levels of depression, anxiety, and stress. Since we predicted that there would be significant differences between white and non-white participants on the levels of depression, anxiety and stress, this hypothesis was not supported. However, it still highlights the issues that minority students struggle with on a regular basis.

In terms of depression, a study by Wei and colleagues (2011) identified that minority stress positively relates to depressive symptoms and found the buffering effect of perceived bicultural competence against depressive symptoms in a sample of Asian, Black, and Latino/a American students attending a primarily White university. This was also found in an exclusively Latino/a population in terms of minority stress on depression (Arbona, Jimenez, 2014;), and exclusively Black population with discrimination distress and depression (Chao, Mallinckrodt, Wei, 2012). Additionally, the Wei and colleagues study describes a distinction between minority related stress and general stress, with minority related stress being significantly higher in minorities. The current study only measured general stress. However, this study found no significant differences in levels of stress and anxiety between minorities and non-minorities, which does not support existing evidence. Previous studies have concluded that minorities suffer from higher levels of stress. The difference in findings, in relation to Greer and Chwalisz (2007) and Smedley, Myers, Harrel, (1993), could be due to measurement effects. These authors used

The Perceived Stress Scale (Greer & Chwalisz, 2007), the Live Events Survey for College Students, and the Current Concerns Scale (Smedley, Myers, & Harrel, 1993), while both also compared these scales to the Minority Student Stress Scale. Relating to anxiety, Okazaki (1997) used the Social Avoidance and Stress Scale and the Fear of Negative Evaluation Scale. Additionally, the lack of significant effects from this study could be explained by the low level of diversity across participants (minorities totaling 22.8%), as well as the grouping of all minorities into a single category of “minority”. Furthermore, as alluded to above, minority stress may be a more accurate measure for minorities compared to a measure of general stress. Finally, affecting all reported findings, data from the current study included the times prior to the universities move to online teaching due to COVID-19, with 90.7% of participants having completed the questionnaire before then, and lasted through the end of the semester with all COVID-19 restrictions in place (February until April). This likely led to differing levels of mental health indicators due to a history effect.

Parental Education and Mental Health Indicators

Depression was found to have an inverse relationship with parental education. Individuals from the lower (High School or Lower) level had higher levels of depression compared to the middle (Post High School) and high (Graduate school and above) education levels. There was no significant difference in anxiety or stress by middle and high level of parental education. Therefore, the second hypothesis of low parental education individuals having higher levels of depression, anxiety and stress compared to higher parental education individuals, was partially supported. This adds to what is already known about the negative impact of low parental education on mental health.

The current study results are in line with previous findings on depression, neighborhood safety concerns, and PA (Meyer et al., 2014), depression as related to sense of poverty (Reyes & Yujuico, 2014), and depression related to what type of school is being attended (Sancakoğlu & Sayar, 2012;). For instance, Reyes and Yujuico (2014) found that sense of poverty, not SES itself, contributes greatly to distress in college students, while “family problem-solving and access to services mitigate the effect of family SES on sense of poverty” (p.6). This also shows the potential benefits of resources for college students in combating mental health issues. However, the absence of significant differences across anxiety and stress does not concur with the literature. This could be explained by the fact that if sense of poverty relates to distress, then measuring different contributors of SES (e.g., parental education) may not be sufficient. Specific differences with literature include lower levels of SES being found to relate to higher levels of stress hormones (Cohen et al., 2006). Low SES was also found to relate to distress in parents, leading to worse relationships with their children and subsequent distress in children (Grzywacz et al., 2004). Research also indicated a positive association between SES and PA and a subsequent negative association between SES and a broad measure of mental health (Meyer et al., 2014) and an inverse relationship between SES and negative mental health characteristics (Ochi, Fujiwara, Mizuki, Kawakami, 2014). Interestingly, neither of these studies measured perceived sense of poverty. Similar to the potential reasons for a non-significance of race in relation to anxiety and stress, the number of participants from the lowest level of parental education was scarce (totaling 7.6%). This could explain the lack of findings across variables. The usage of parental education as a proxy for SES and time span of data collection may also contribute to this.

Physical Activity and Mental Health Indicators

Individuals participating in structured PA, intramurals, or club sports, had more positive scores on all three mental health indicators when compared to non-participants. Intramural sport and club sport participants had significantly lower levels of anxiety and stress, and non-significantly lower levels of depression. There was no significant difference between intramural and club sport participants. These findings partially supported the hypothesis on the relationship between participation in structured PA and lower levels of depression, stress, and anxiety. Additionally, these results greatly add to the literature that PA is a good method for improving mental health.

Armstrong and Oomen-Early (2009) found similar results on levels of depression in college athletes. They reported that athletes had higher levels of self-esteem compared to non-athletes. Previous research has shown that there is a negative relationship between self-esteem and stress (Hubbs, Doyle, Bowden, Doyle, 2012) as well as self-esteem and anxiety (Greenberg et al., 1992), which is in line with the study's findings on anxiety. This adds to previously reported findings that recreational sport participation could buffer against stress-related anxiety (Kanters, 2000). Elkins and colleagues (2011) reported that recreational sport program use had a negative relationship with loneliness and stress, and a positive relationship with sense of campus community, based on residential experience. A study on usage of college campus recreational sport facilities, programs and services found that over 90% of users felt that it helped them improve in multiple areas, including overall health and overall well-being (Forrester, 2015). Furthermore, there was a positive relationship with usage rate and health and overall well-being. The non-significance of depression across all three variables was surprising based on previous findings linking physical activity to depression. In college females, PA was found to be

negatively related to depression, while strength training showed a negative relationship with depression and anxiety (Adams, Moore, Dye, 2007). The positive relationship of recreational sport program use with sense of community further also adds to the depression literature (Elkins et al., 2011). Further research has shown that sense of campus community positively affects well-being, as measured on anxiety and depression (Henderson, 2019). No significant differences between club and intramural sports could be explained by the similarity in structure and commitment to both types of recreational sports. Both have a team sense and regular expected commitment to participation. Where they differ is the regular practices for club sports while intramural sports do not have that component, however, some intramural sport teams still engage in regular practices. Additionally, there was a low number of club sport participants in this sample (totaling 8.7%, while intramural and non-sport participants made up 33.5% and 57.8%, respectively). The time span of data collection may also have affected the results as a portion of this span was during a time when recreational and club sports were not available. Finally, categorization does not include individuals who participate in PA outside of intramural or club sports. The fact that individuals within the no-sport participation category may participate in other types of PA could have been one of the study's limitations. The primary sampling from a kinesiology department further contributes to this issue.

Relationship among Gender, Race, SES and PA on Mental Health Indicators

The final hypothesis was that being male, a minority, low parental education, and no participation in PA would be associated with high levels of depression, anxiety, and stress. This hypothesis was partially supported by the data. Identifying as female was associated significantly with higher level of stress. This is generally supported in the literature (Kneavel, 2020; Matud, 2004; Mirowsky, 1995; Schlichtiger, Brunner, Steffen, Huber, 2020; Wathélet et al., 2020),

However, no significant relationships were found with race, SES, PA and levels of depression, anxiety, or stress.

The findings are not consistent with what has been reported in the literature. Although the hypothesized relationship between PA, race, SES and levels of depression, anxiety, and stress, was not fully supported in this analysis, previous research found this relationship to be significant and worth further investigation. A study by Williams (1999) showed that SES is a better predictor of health between individuals from varying levels of SES, although, within individuals of the same SES, race is an adequate and effective predictor of health; “However, SES is not just a confounder of racial differences in health but part of the causal pathway by which race affects health. Race is an antecedent and determinant of SES [...]” (p. 177). This suggests difficulties of minorities attaining a higher SES due to discrimination, bias, and minority stress and how SES is the main driving force behind mental and general health. It also indicates the predicting effect of SES and race on mental health, which was not found in the present analysis. Previous research also indicated the positive relationship between PA and several indicators of mental health (Adams, Moore, Dye, 2007; Elkins, Forrester, Noël-Elkins, 2011; Sturts & Ross, 2013), while generally females have worse levels of mental health indicators (Wathelet, et al., 2020). As mentioned earlier, several potential reasons for the non-significant findings between PA, race, SES and depression, anxiety and stress include limited diversity of the sample, limited numbers of low parental education participants, sampling being done primarily in the kinesiology department, data collection time span, and the narrow focus of PA categories.

Quantitative versus Qualitative Results

What was interesting were some of the convergence and divergence between qualitative and quantitative results. An aspect that was particularly interesting were the non-significant differences relating to race. This somewhat contradicted with some participants of minority status indicating obstacles related to their minority status to seeking professional services on campus.

Furthermore, the limited significance found between parental education levels may be confusing when compared to the literature and some qualitative responses. Depression was the only significant variable, where those with caregivers at the lowest level of parental education had significantly higher levels of depression compared to the higher levels of parental education. One would expect to find the same results across anxiety and stress, due to a lack of resource seeking of those originating from a lower parental education level. This was found in the literature, as addressed in the discussion section, and would be expected to be revealed in the qualitative responses. In the current sample, more representative of the higher levels of education, stigma (housed under personal reasons) was the most prevalent reason for not seeking help. One would expect stigma to be much less prevalent with the current sample, while being more prevalent when looking at responses from the low parental education group. However, with individuals from the lowest level of parental education, “no obstacles” for seeking resources was just above “personal” reasons. One aspect where the qualitative and quantitative results converged was in relation to PA participation and social relationships. Intramural and club PA participants had significantly better levels of mental health compared to individuals who did not participate in PA. Given the importance of social relationships, as indicated through the

qualitative responses, it makes sense to have better mental health when consistently engaging in an environment with structured social interaction, like intramural and club PA.

Implications

Results indicating that those from low parental education have higher levels of depression versus their counterparts further contributes to the literature. It also highlights the importance of mitigating these effects based on demographic characteristics of individuals. Furthermore, it calls for resources on college campuses that help in this mitigation by focusing specifically on differences with depression inducing experiences of minority and low SES college students. The further identification of PA's negative relationship with anxiety and stress suggests its value to health and well-being of college students in general and calls for an identification of reasons why students would not engage in PA and ways to promote participation.

Further, methods to aid well-being relate to the three most common obstacles, as reported through free-response questions. Granting especially incoming students more guidance and support with academic, social, and scheduling issues could tremendously improve their well-being throughout their college experience. Educating students on different strategies and resources to aid in overcoming obstacles may be extremely effective as most did deal with their obstacles on their own. More social support could improve effectiveness of programs. On the other hand, educating students on mental health would also go a long way as related to the personal obstacles to seeking help (stigma, being uncomfortable, problem seeming insignificant), while increasing the diversity of professionals within the mental health resources across campuses would further the comfortableness of the diverse student population.

Limitations

There are a number of limitations to consider in this study. In terms of race, the study was not able to attract large enough groups of participants across minority ethnic groups to carry out meaningful statistical comparisons. This is to be expected because participants were recruited from a large midwestern, primarily white, NCAA division I, institution. The limited diversity in the current sample may account for the lack of significant race differences in anxiety and stress. The cause for this low rate of minority participation may coincide with minorities being less likely to seek professional help (Carter & Forsyth, 2010). It may also be that students are experiencing similar stress and anxiety challenges regardless of race.

Another limitation relates to lack of inclusion of non-structured PA. Many participants could have been participating in private PA, like weightlifting, cardio, PA class, or any other form of PA, without indicating the participation in structured PA. In other words, individuals in the non-participation category could have been engaging in regular PA. This could have resulted in less differences between the non-PA participating group and the PA participating groups. Further, using parental education as a proxy for SES is not ideal, as it does not incorporate all aspects related to low SES. Additionally, sense of SES may be a valid addition. Finally, free responses lacked significant nuance and interpretability, suggesting adaptation of questions asked and inclusion of focus groups.

Future Directions

Future research could identify differences among a larger range of age groups, including high school or younger as well as at workplaces and comparing free responses across demographic variables, like gender, race, and SES. An interesting addition, although Mallinckrodt and Wei (2012) already did so, would be the inclusion of how exposure to

depression, anxiety, stress, and other mental health indicators manifest themselves in specific behaviors (maybe even outbursts). This could potentially result in early detection of exposure to detrimental mental health and therefore more effective treatment or preparation of the affected individual. Further, as mentioned earlier, being able to compare the effectiveness of a multitude of different PA categories (e.g., intramural, club, academic class, intercollegiate, private) and being more specific with the type of PA (e.g., team sport, individual sport, dancing, strength training, endurance) could further contribute to specific guidelines and identification of coping effectiveness of each. Other resources on college campuses or in communities for the improvement of mental health should be evaluated on a detailed basis. Not from a resource-oriented standpoint, but from a person-centered standpoint. Detailed feedback by users could improve usability and effectiveness while also combating the mental health stigma. Finally, future research may have to consider using recruitment strategies that can increase the participation of ethnic minorities students. These may include involving different types of universities (e.g., majority white/historically black/different representations; large school/medium school/small school; NCAA divisions) and a wide spanning recruitment at those universities.

Conclusion

Overall, these results are similar to previous findings in the literature. Unfortunately, they do paint a bleak picture of the issues that minorities and individuals from low SES must go through. On the other hand, the positive results of physical activity participation in relation to mental health paint a positive picture. Meaning that regardless of being a minority and/or having a low SES, participation in organized PA should decrease levels of depression, stress, and anxiety. This information should contribute to improvements of PA in total, like the availability,

retention, and access to PA and most importantly increase exposure to PA opportunities and education about their potential benefits.

It would also be important to identify further positive opportunities for individuals to improve on their mental health. Mental health issues experienced due to race are only increased with the addition of a low SES, which hinders individuals from being successful, attaining better education and therefore a higher SES, making it clear that there is a cycle that needs to be broken. The more resources beneficial to mental health we can identify the more success we can stimulate regardless of predetermined factors.

Overall, this study extends existing findings on the benefits of structured PA participation on mental health and highlights mental health difficulties of the general student body. Results also show reasons given by students for the mental health problems they face and potential strategies to combat those challenges on university campuses. This study used a mixed methods approach which is less uncommon. This allows for a richer inquiry on PA and mental health challenges college students face. It also establishes a connection between mental health and student experiences. The findings suggest that multiple methodologies may be necessary for adequately evaluating the relationship among PA and mental health, as well as students' perceptions of mental resources and campus support services. This allows for more comprehensive and targeted approaches to improving college students' experiences, resources and support services which could be used to improve mental health. Such strategies could include collaborative partnerships involving students, staff, and faculty. This type of collaboration should also emphasize differences in student needs and preferences as well as consider student demographics (e.g., gender, race, and SES).

The study further shows existing gaps in the literature, which must be addressed in future investigations using other research methods. Those methods include randomized controlled trials to establish causal relationships between PA and improved mental health while accounting for various covariates. For example, individuals who choose to participate in PA may, by nature, be less neurotic. In turn, neuroticism was found to positively relate to several mental health problems (Newton-Howes, Horwood, & Mulder, 2015). In terms of SES, there is a need to distinguish between the effect of SES and the effect of perceived SES, as well as the effect of a lack of resources affecting mental health, as alluded to by Reyes and Yujuico (2014). It would be important to identify the impact that the combination of low SES and being of minority status has on mental health while identifying the positive impact that PA can play. Finally, university students should be more informed of the benefit of PA. Furthermore, benefit lies in identifying ways to encourage non-physically active participants to initiate PA in a comfortable and supportive manner and identifying reasons why PA is avoided.

CHAPTER 3: STUDY 2 PHYSICAL ACTIVITY PARTICIPATION AND MENTAL HEALTH IN COLLEGE

Abstract

Around half of all college students struggle with mental health. In addition, race, socioeconomic status (SES), and participation in physical activity (PA) affect the levels of negative mental health indicators, like depression, stress, and anxiety. Therefore, this mixed-methods study's objective was to identify levels of depression, anxiety, and stress across different demographics. Additionally, Structural equation modelling was used to examine mediation effects of type of PA on the relationship between race and parental education with mental health. Finally, the study sought to identify obstacles of college students, their opinions on on-campus resources, and how to improve those resources. Participants from two universities (a large midwestern and small east coast university: M age = 20.77; 60.6% Female; 84.2% White) completed an online survey, including demographic questions, the Depression Anxiety Stress Scale (DASS-21), as well as a College Experience Questionnaire regarding obstacles and on-campus resources. Focus groups were held to further evaluate qualitative responses. Non-significant differences were found across race and mental health, while lower parental education showed some significance in terms of having higher levels of anxiety. Surprisingly, males showed higher levels of depression compared to females. Intramural sport participants were found to have higher levels of depression and anxiety compared to NCAA and personal/unstructured PA participants. Additionally, NCAA athletes had lower levels of stress compared to non-physically active students and PA class participants. SEM results did not support the predicted model; however, several path coefficients were significant. Qualitative and focus group responses guide on potential methods of improving student well-being and on-campus resources.

Introduction

The current state of the world, as affected by a global pandemic, is clearly unusual and negatively affecting mental health for all (Xiang et al., 2020). This includes mental health struggles for not only health professionals and individuals in other professions, but the entire population (Vinegaard & Benros, 2020). PA behavior has also decreased (Wilke et al., 2021), linked to worse mental health in quarantining individuals (Maugeri et al, 2020). We are aware of the benefits that physical activity can have on mental health (Paluska & Schwenk, 2000) but this benefit might be more difficult, albeit more important, to come by now. Individuals who decreased PA throughout COVID-19 restrictions have experienced poorer mental health (Faulkner et al., 2020). Unfortunately, college students are among the most affected by decreased PA behavior overall (Faulkner et al., 2020). Additional college student subgroups have further struggles, preceding the COVID-19 pandemic. This includes minorities attending primarily White universities (DuPont-Reyes & Villatoro, 2019), and low-SES students having further barriers like identity-management issues (Jury, et al., 2017) while being more vulnerable to stressors (Grzywacz et al., 2004).

It is noteworthy that individuals of minority status, oftentimes also of low SES (Noël, 2018), have additional stressors. For example, from a nationally representative sample, almost 50% of minorities reported experiencing discrimination from time to time or regularly, compared to less than 30% of White participants (Lee et al., 2019). Broken down further, for Black individuals this number goes up to 58% for “time to time” with 11% reporting experiencing regular discrimination. When looking at coping in general, Black athletes are more likely to use avoidance coping compared to White athletes (Anshel, Kang, & Miesner, 2010). This is likely due to the exposure to racial discrimination not allowing for approach coping. Furthermore,

perceived racial discrimination among Black, Asian, and Hispanic populations in the US was connected to several mental health issues, like major depressive disorder and PTSD, with Black and Hispanic participants also being exposed to substance use disorder (Chou, Asnaani, & Hofmann, 2012). A positive relationship was found between perceived racial discrimination, symptoms of posttraumatic stress, and detrimental coping styles, like drug use, violence, and sex in Mexican American adolescents (Flores, Tschann, Dimas, & Pasch, 2010). In general, minorities exposed to racial discrimination, as compared to life stress, tend to cope passively through rumination and avoidance rather than seek help (Hoggard, Byrd, & Sellers, 2012), further adding to negative outcomes due to race. These findings call for further analysis of mental health, and ways to improve well-being and PA in the most vulnerable university students.

Therefore, the purpose of this study was to examine the relationship among race, parental education, PA, and depression, anxiety, and stress levels within the context of a diathesis model. This study also sought to expand the target population by recruiting participants from various academic programs at two universities from two regions of the United States, a large midwestern university and a midsize northeastern university. The following hypotheses were examined:

1. Race, parental education level, and type of PA/Sport involvement are associated with levels of depression, anxiety, and stress in college students
2. PA participation predicts depression, anxiety, and stress above race and parental education among college students.

The College Experience Questionnaire, informed by open-ended questions from study 1, was used to learn about university student obstacles, perceptions of on-campus resources, barriers to resources, motivators, and perceived benefits of PA participation. Focus groups were employed

for a better understanding of the College Experience Questionnaire responses, as well as to focus on ways to improve on-campus resources. Another unique contribution of study 2 is an examination of the mediating effects of PA, through the adapted diathesis stress model, on the relationship of race and SES with depression, anxiety, and stress. The conceptual framework is presented in Figure 2 below.

To evaluate the above hypotheses, the objectives of the study were to: 1) utilize a mixed method design to develop an in-depth understanding of the relationship among PA, race, parental education, depression, stress, and anxiety in college students, 2) collect data on different types of PA and sport, including NCAA sports, and 3) involve recruitment from two distinct universities and a variety of departments within each. Additionally, study 2 included several focus groups to further illuminate information given on free response questions.

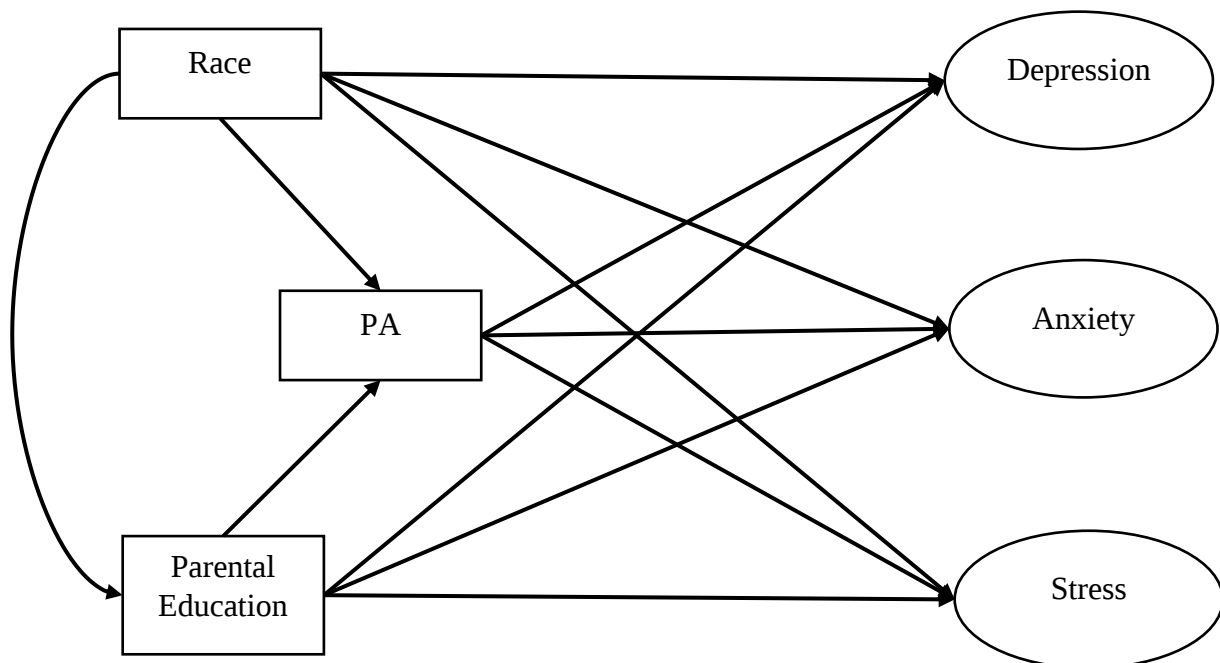


Figure 2 Theoretical Framework; Diathesis-Stress Model (Adapted from Bleuler, 1963 Rosenthal, 1963)

Potential Correlates of Depression Anxiety and Stress

There are several factors internal to the participants that could also affect the relationship among PA, depression, anxiety, and stress. One of these are internal psychological skills. A meta-analysis by Lee and colleagues (2013) found that resilience, “or the positive adaptation, or the ability to maintain or regain mental health, despite experiencing adversity,” (Herman et al., 2011; p. 259) was consistently negatively correlated with depression, anxiety, and stress, where depression and anxiety had the strongest negative correlation. Similarly, self-regulation in childhood predicted future negative correlations with depression and anxiety (Robson, Allen, & Howard, 2020). Additionally, a self-regulation intervention revealed an increase in well-being and decrease in stress as well as burnout in collegiate athletes (Dubuc-Charbonneau & Durand-Bush, 2015).

Types of perfectionism are other factors affecting levels of depression. According to Noble, Ashby and Gnilka (2014) adaptive or healthy perfectionists showed lower levels of depression, followed by non-perfectionists. Maladaptive or unhealthy perfectionists in turn had the highest level of depression. In addition, non-perfectionists, like maladaptive perfectionists, were more likely to use avoidant coping, a type of emotion-focused coping. Avoidant coping style, especially with low social support, is associated with low well-being (Chao, 2011). In relation to coping styles, it was found that those with low levels of anxiety and depression are more likely to use task-focused coping, a type of problem-focused coping (Kariv & Heiman, 2005), while those with higher levels of depression are more likely to use emotion-focused coping (Leandro, Castillo, 2010), of which avoidance is one strategy.

Some factors associated with depression, anxiety, and stress are external to the individual and may include on campus experiences and difficulty adjusting to a new college environment

for transfer students, freshmen, or ethnic minorities in colleges where students are predominantly white. Those living off-campus and transferring from other colleges were found to have higher levels of anxiety compared to their counterparts (Beiter, et al., 2015). Students living off-campus were also found to have significantly higher levels of stress, and non-significantly higher levels of depression. Additionally, females rated academics and body image as a significant source of stress. Finally, financial stress was found to be negatively related with well-being in university students (Robb, 2017). Although the roles of all these factors on anxiety and stress were not directly assessed in this study, open ended questions and focus group discussions were designed to tap into these issues.

Methods

Participants

The sample for the online questionnaire consisted of undergraduate ($N = 407$) and graduate students ($N = 38$, M year in college = 3.17, $SD = 1.39$) from a large, NCAA Division I, mid-western university, with a student population of more than 40,000 (large university) ($N = 331$, 65.1%), and a small, NCAA Division III, east coast university, with less than 10,000 students (small university) ($N = 129$, 26.8%; participants from other universities totaled .2%). Participant ages were 18 years and above ($M = 20.77$, $SD = 1.58$). Further participant characteristics are displayed in table 4. The sample for the four focus groups, two groups at the large university and two at the small university, consisted of undergraduate and graduate students. Characteristics are listed in tables 15 and 16 in the results section for the focus groups.

Recruitment and Procedure

Students from a large and a small university were, through email, invited to participate. The email was distributed by the primary investigator to kinesiology students and faculty at the

large university. The email was also distributed to collaborators at the two universities, in kinesiology, psychology, recreational sports, and NCAA athletics, to be forwarded to potential participants. This fulfilled objective 3), expanding recruitment of participants to two universities and multiple departments within each. To allow for increased participation through snowball sampling, further distribution by students, professors, departments, and organizations across both campuses was encouraged, resulting in participants from the non-recruited universities. The primary investigator also, virtually and in-person at the large university, attended classes and practices to speak about the research and answer questions. Recruiting emails included a brief description, overview of the study, and a link to the online questionnaire. Upon following the link, participants arrived at the informed consent and were asked their age. Once participants accepted the informed consent and indicated to be above 18 years of age, they were forwarded to the questionnaire items, all through the online survey software Qualtrics. The questionnaire began with the demographics questionnaire and DASS-21 (Lovibond & Lovibond, 1995) before concluding with the College Experience Questionnaire.

Completion of the questionnaire took approximately 20 to 30 minutes. Subsequently, participants were informed about the focus groups, to be held towards the end of questionnaire data collection (in conclusion of the 2021 Spring semester) and were forwarded to a focus group questionnaire. Participants willing to take part in the focus groups completed this short questionnaire asking their gender, race, and best email address to contact them for potential participation. Purposive sampling based on participant demographics provided in the focus group questionnaire was used to ensure diversity of the sample. The questionnaires were available through the end of the spring 2021 semester.

Measures

Demographic Information (Appendix F)

A demographic questionnaire was developed for this study, based on feedback from study 1. The primary variables of interest were major, year of study, guardian education level (as proxy for socioeconomic status), race, PA participation (NCAA sports, intramural sports, club sports, personal/unstructured PA, PA class, or none of the above) and gender. Additional information includes, employment and time spent on PA and schoolwork. To fulfill objective 2), collecting data on a wide variety of PA participation, the College Experience Questionnaire was enhanced to include additional types of PA.

Depression, Anxiety, Stress (Appendix C)

The Depression Anxiety Stress Scale-21 (DASS-21; Lovibond & Lovibond, 1995) was used to identify the mental health indicators of depression, anxiety, and stress. This short form of the DASS-42 (Lovibond & Lovibond, 1995) has the subscales of Depression, Anxiety and Stress. These have established good internal consistency, indicated by Cronbach's alpha (Osman et al., 2012): Depression ($\alpha=.88$); Anxiety ($\alpha=.81$); Stress ($\alpha=.88$). Subscales are measured on a 4-point Likert scale, with answers spanning from 0 ("Did not apply to me at all") to 3 ("Applied to me very much, or most of the time"). Sample question for Depression is, "I found it difficult to work up the initiative to do things"; Sample question for Anxiety is, "I was worried about situations in which I might panic and make a fool of myself"; Sample question for Stress is, "I found it difficult to relax". This measure was selected for its brevity and suitability for evaluation of broad and highly significant mental health indicators.

College Experience Questionnaire (Appendix C). Study 1 used free-response questions adapted for this study with the help of faculty and staff from participating institutions.

Additionally, participant fatigue of the pilot study was considered in the development of this section. Participants completed a maximum of five free-response questions addressing obstacles they faced since entering college, aid from on-campus resources in overcoming obstacles, suggestions for improving those resources, barriers to seeking help, and skills they were lacking when entering college. Additionally, participants were asked a maximum of three related quantitative questions about motivations related to being a college student and perceived benefits of PA. Information gained from this questionnaire primarily aided in identifying ways in which formal and informal on-campus resources could be adapted to benefit students most.

Focus Groups (Appendix H)

In addition to questionnaires, two, 60-to-90-minute focus groups were conducted towards the conclusion of the survey data collection. These were done virtually at each university resulting in a total of four focus groups. Preliminary genre analysis from initial survey questionnaire responses informed the semi-structured interview questions. The focus groups provided more in-depth information about the quality of access to campus resources and input on how to improve them. Again, these helped enhance information through a method (e.g., focus groups and qualitative questions) that has not been used extensively on this topic. As mixed-method approaches facilitate researchers' understanding of possible contradictions between quantitative and qualitative findings, the focus groups assisted in further exploring possible discrepancies.

Data Analysis

Objective 1) of the study was to utilize mixed methods to improve the understanding of PA, race, parental education, depression, stress, and anxiety relationships among college students. This was accomplished through the following methods

Quantitative Questionnaire Analysis (Hypothesis (1))

Quantitative analysis was done through the Statistical Package for the Social Sciences (SPSS, version 28). Independent samples t tests and ANOVAs were conducted to compare the subscales of depression, anxiety, and stress with race, parental education, PA participation, and gender.

Structural Equation Modelling (Hypothesis (2))

Structural equation modelling, through Analysis of a Moment Structures (AMOS, version 28), was used to examine the mediational effect of PA on the relationship between race and education with mental health (depression, anxiety, and stress), in a latent variable framework (Figure 2). This model is based on the diathesis-stress theory by Bleuler (1963) and Rosenthal (1963), although the predicted outcome is an improvement (decrease) of levels of depression, anxiety, and stress as related to the mediating effect of PA on race and parental education. In other words, how effective is PA in improving mental health in connection with predetermined factors, like race and SES. The hypothesized model predicts a direct effect of race, parental education, and PA on depression, anxiety, and stress. In addition, the model predicts an indirect effect of race and parental education on depression, anxiety, and stress through PA. This structure was chosen to identify the direct and indirect effects of race and parental education, as well as the mediating effect of PA, on depression, anxiety, and stress. Depression, anxiety, and stress are included in the same path model due to disorders associated with these variables having overlapping symptoms (American Psychiatric Association, 2013). Depression, anxiety, and stress are depicted as latent variables (ovals) due to being predicted by subscale scores, ensuring a lack of bias from measurement error of path estimates (Coffman & MacCallum, 2005).

First, measurement models were established, and assessed, for depression, anxiety, and stress, using confirmatory factor analysis. This was done to identify if the item scores of the DASS-21 formed the subscale scores of each mental health variable (depression, anxiety, stress). Following, the full-scale model was assessed. Three fit statistics were evaluated. Root-mean-square error of approximation (RMSEA) is the first statistic. Its value indicates how different the current model is from a perfect model, with the following categorization of values: $RMSEA \leq 0.05$ = close fit; $RMSEA 0.05 \leq 0.08$ = decent fit (Kline, 2011). The second and third statistics are the comparative fit index (CFI) and the Tucker Lewis Index (TLI). They both assess how the current model fits in relation to a worst fitting model with $CFI \geq .90$ and $TLI \geq .90$ indicating good model fit (Xia & Yang, 2019).

Qualitative Questionnaire Analysis

Qualitative data from open-ended questions were analyzed and coded following a content analysis approach (Saldaña, 2011). These codes were consolidated with codes from study 1, to ease the difficulty of working with a large data set and refined accordingly until achieving data saturation. This process was undertaken by the primary investigator and one additional research assistant.

Focus Group Analysis

After transcribing the focus groups, Ritchie and Spencer's (2002) guidelines concerning interview protocols was followed, due to their applied policy research relating to the nature of this study. A thematic framework was initially guided by established codes from responses to the open-ended questions. It was then further "refined" through the initial coding of the focus groups (Ritchie & Spencer, 2002, p. 314). Following, a combination of indexing (i.e., coding) and charting (i.e., quantifying) was used to establish initial codes of the data. The final step included

enhancing the initial codes through mapping and interpretation to identify overarching themes of the codes and comparing those to the open-ended questionnaire responses.

A phenomenological approach was utilized for reporting the focus groups. This approach is preferred as focus groups include participants with vastly different backgrounds (e.g., adult learners, graduate and undergraduate students, athletes and non-athletes, different universities) resulting in vastly different experiences, needs for, knowledge about, and exposure to resources. This results in an inability to truly generalize outcomes of the focus groups to the rest of the university student community. Usually, generalizability is highly sought after in research. In this study it is not as it would likely be more detrimental than beneficial to aid students by making broad changes to resources. Rather, it is necessary to make individualized changes that will help students with specific obstacles. It is therefore important to employ an interpretive approach, such as phenomenology, highlighting participants different backgrounds, their opinions, and ideas to inform resources about different ways to aid different students, while still having the ability to generalize when appropriate. The goal of phenomenology, as mentioned by Saldaña (2011), is to gain an “understanding of how humans experience something” (p. 8). This knowledge makes it clear that other qualitative approaches may not be suited due to their goal of broader understanding of a group of people (e.g., ethnography, grounded theory and its need for a framework), or the goal of meticulously understanding a circumstance (e.g., case study).

Results

Quantitative Assessment of College Student Demographics Related to Mental Health

Missing data was not completely at random as indicated by the significance of Little’s MCAR test (Chi-Square = 1110.103; $df = 925$; $p < .001$). All 25 variables used for analysis had missing data ranging from 4.2% to 16.6% of missing data. A total of 159 out 481 cases were

incomplete (33.06%). Most missing data was on the DASS-21 (percentage of missing data ranging from 14.8 to 16.6%). The most common missing value pattern across cases involved no missing data, followed by only, but all, variables on the DASS-21 missing. All participants with missing data on more than three variables (12.3%) are missing all DASS-21 variables. Percentage of participants missing data on one, two, or three variables total 31.6%, 7.5%, and 6.7% respectively. These percentages accumulate to 4.2%, 7.7%, 4.8%, and 4.6% across race, parental education level, PA category, and gender, respectively. Incomplete variables were imputed using multiple imputation chosen by SPSS based on a data screen, with all variables as predictors. Data was also identified as being normally distributed. Imputed and original data descriptives can be found in table 3.

Table 3 Participant Imputations, Means and Standard Deviations

Race		N	Percent	Mean	SD
Original data	White	389	80.9		
	Non-White	72	15.0		
	Total	461	95.8	.16	.36
	Missing	20	4.2		
Imputed Data	White	405	84.2		
	Non-White	76	15.8		
	Total	481	100.0	.16	.37
Parental Education					
Original data	High school graduate or below	54	11.2		
	Education after high school other than 2-year or 4-year college (e.g., trade school)	52	10.8		
	Attended or graduated from college (bachelor's degree)	191	39.7		
	Master's degree or above	147	30.6		
	Total	444	92.3	1.97	.97
	Missing	37	7.7		

Table 3 (cont'd)

Imputed Data	High school graduate or below	59	12.3		
	Education after high school other than 2-year or 4-year college (e.g., trade school)	68	14.1		
	Attended or graduated from college (bachelor's degree)	202	42		
	Master's degree or above	152	31.6		
	Total	481	100.0	1.93	.97
Gender					
Original data	Male	181	37.6		
	Female	278	57.8		
	Total	459	95.4	.61	.49
	Missing	22	4.6		
Imputed data	Male	200	41.6		
	Female	281	58.4		
	Total	481	100.0	.58	.49
PA Category					
Original data	No	72	15.0		
	Physical Activity Class	23	4.8		
	Personal/unstructured	197	41.0		
	Intramural physical activity	13	2.7		
	Club Sports	35	7.3		
	NCAA Sport	118	24.5		
	Total	458	95.2	2.59	1.73
	Missing	23	4.8		
Imputed data	No	79	16.4		
	Physical Activity Class	24	5		
	Personal/unstructured	198	41.2		
	Intramural physical activity	27	5.6		
	Club Sports	35	7.3		
	NCAA Sport	118	24.5		
	Total	481	100.0	2.56	1.72
Depression					
Anxiety	Original data			3.97	4.6
	Imputed data			5	5.16
Stress	Original data			3.69	4
	Imputed data			5	4.99
	Original data			5.98	4.44
	Imputed data			6.56	4.46

The following four sections (related to race, parental education, gender, and PA) involved comparisons of means as part of hypothesis 1. Following is the section on the PA Mediation model to evaluate hypothesis 2 of the study.

Race and Mental Health Indicators

To address part 1 of hypothesis 1, independent samples t-tests were performed to analyze differences in depression, anxiety, and stress across white and non-white participants. Non-statistically significant differences were found in levels of depression ($t(479) = -125, p = .90$) between white ($M = 4.99, SD = 5.15$) and non-white ($M = 5.07, SD = 5.24$) participants. A non-statistically significant difference ($t(479) = -.47, p = .64$) was also found in levels of anxiety between white ($M = 4.91, SD = 4.92$) and non-white ($M = 5.20, SD = 5.37$) participants. Similarly, a non-statistically significant difference, ($t(479) = .06, p = .95$), was found between white ($M = 6.56, SD = 4.47$) and non-white ($M = 6.53, SD = 4.48$).

Parental Education and Mental Health Indicators

To address part 2 of hypothesis 1, one-way ANOVAs were used to identify differences in levels of depression, anxiety, and stress across levels of parental education (Table 5). Statistical significance was approached across levels of parental education and depression ($F(3,477) = 2.52, p = .057, \eta^2 = .016$). Parental education and anxiety did show statistical significance ($F(3, 477) = 3.04, p = .029, \eta^2 = .019$), while parental education and stress ($F(3,477) = 1.68, p = .170, \eta^2 = .01$) did not. Tukey HSD post hoc analysis, on anxiety and parental education, revealed lower mean mental health scores for students who reported that their primary caregivers have a master's degree or above ($M = 4.34, SD = 4.56$) compared to those whose caregivers had only gone up to high school ($M = 6.19, SD = 5.59, p = .074$).

Gender and Mental Health Indicators

To evaluate levels of depression, anxiety, and stress across gender, an independent samples t-test was performed (Table 4). A statistically significant difference ($t(479) = 2.08, p = .04$) was only observed between gender and depression, with males ($M = 5.58, SD = 5.38$) having higher levels of depression compared to females ($M = 4.59, SD = 4.96$).

Table 4 T-test Results Comparing Gender on DASS-21

	Male			Female			<i>t</i>	<i>p</i>	<i>d</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>			
Depression	200	5.58	5.38	281	4.59	4.96	2.08	.038	.192
Anxiety	200	5.23	5.63	281	4.76	4.48	1.01	.312	.984
Stress	200	6.11	4.63	281	6.11	4.63	-1.85	.065	.104

Physical Activity Categories and Mental Health Indicators

One-way ANOVAs were also used to identify differences in levels of depression, anxiety, and stress across different types of PA (Table 7), addressing the final part of hypothesis 1. There were statistically significant differences across all mental health categories between types of PA and depression ($F(5,475) = 4.10, p = .001$), types of PA and anxiety ($F(5,475) = 6.61, p = <.001$), and types of PA and stress ($F(5,475) = 4.06, p = .001$). For depression, post hoc comparisons using the Tukey HSD test revealed that levels of depression were significantly higher in individuals participating in intramural PA ($M = 7.93, SD = 5.72$) compared to those participating in personal/unstructured PA ($M = 4.49, SD = 4.52, p = .013$) and those participating in NCAA sports ($M = 4.03, SD = 5.06, p = .005$). For anxiety, Tukey HSD test revealed that levels of anxiety were significantly higher for individuals engaged in intramural PA ($M = 8.81, SD = 6.57$) compared to those participating in personal/unstructured PA ($M = 4.19, SD = 4.32, p = <.001$) and NCAA sport participants ($M = 4.10, SD = 4.36, p <.001$). Regarding stress, Tukey

HSD test revealed that levels of stress were significantly lower in individuals engaging in NCAA sports ($M = 5.50$ $SD = 4.57$) compared to non-physically active participants ($M = 7.46$ $SD = 4.92$, $p = .028$) and those participating in physical activity classes ($M = 8.54$, $SD = 3.36$, $p = .026$).

Hypothesis 1 stated that race, parental education level, and type of PA/Sport involvement are associated with levels of depression, anxiety, and stress in college students. This hypothesis was partially supported. Specifically, certain levels of parental education as well as type of PA involvement supported this hypothesis. On the contrary, the analysis of race did not support this hypothesis.

Physical Activity Mediation Model and Mental Health

Structural Equation Modeling was used to identify the mediating effect of the relationship between race and parental education with depression, anxiety, and stress, through PA, therefore addressing hypothesis 2, which stated that PA serves as a mediator of the relationship of race and parental education with depression, anxiety, and stress, as well as the adapted diathesis-stress model not being accurate in explaining the above-mentioned relationship. Correlation coefficients among variables can be found in table 5.

Table 5 Correlations Among Variables in Analyses

	Race	Parental Education	Gender	PA Category	Depression	Anxiety	Stress
Race	1						
Parental Education	-.238**	1					
Gender	-.132**	.112*	1				
PA Category	.002	.016	-.067	1			
Depression	.006	-.115*	-.095*	-.079	1		
Anxiety	.021	-.131**	-.046	-.067	.772**	1	
Stress	-.003	-.088	.084	-.127**	.736**	.781**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Modifications were undertaken in the measurement model of stress (differences between the original and modified model can be found under table 6). This measurement model included one modification in which the lowest factor loading, .49, onto stress was deleted. This improved model fit statistics for stress from marginal (RMSEA = .148; CFI = .852; TLI = .778) to decent data fit (RMSEA = .116; CFI = .932; TLI = .887). The item deleted was question one, “I found it hard to wind down”. On the other hand, single item deletions for the measurement models of depression (RMSEA = .186; CFI = .888; TLI = .832; poor model data fit) and anxiety (RMSEA = .082; CFI = .966; TLI = .949; good model data fit) did not significantly improve fit statistics.

Table 6 Regression Weights on Stress in the Stress Measurement Model

Model	Variable	Estimate	P	Fit Statistics
Original	DASSQ1	.487	< .001	RMSEA = .148 CFI = .852 TLI = .778
	DASSQ6	1.078	< .001	
	DASSQ8	.979	< .001	
	DASSQ11	.897	< .001	
	DASSQ12	1.000		
	DASSQ14	.920	< .001	
	DASSQ18	.894	< .001	
Modified	DASSQ6	1.153	< .001	RMSEA = .116 CFI = .932 TLI = .887
	DASSQ8	.994	< .001	
	DASSQ11	.932	< .001	
	DASSQ12	1.000		
	DASSQ14	.989	< .001	
	DASSQ18	.983	< .001	

The model data fit for the full hypothesized model was low (RMSEA = .126, CFI = .695, TIL = .619). This meant that it was unable to support hypothesis 2. However, multiple path coefficients were significant (table 7). For depression the significant path is parental education level ($\beta = -.09, p < .001$). In relation to anxiety, these were PA ($\beta = -.03, p = .42$) and parental education level ($\beta = -.08, p = .002$). For stress they were also PA ($\beta = -.05, p < .001$) and parental education ($\beta = -.07, p = .003$). Additionally, each of the manifest variables (DASS-21 questions)

had a statistically significant loading on their respective latent variables (depression, stress, anxiety) (model test results are displayed in Figure 3).

Table 7 Path Coefficient Estimates of Full Model

Variable	Predictor	Estimate	P
Depression	PA	-.022	.111
	Education	-.085	< .001
	Race	-.078	.251
Anxiety	PA	-.029	.042
	Education	-.080	.002
	Race	-.083	.238
Stress	PA	-.045	< .001
	Education	-.068	.003
	Race	-.059	.336

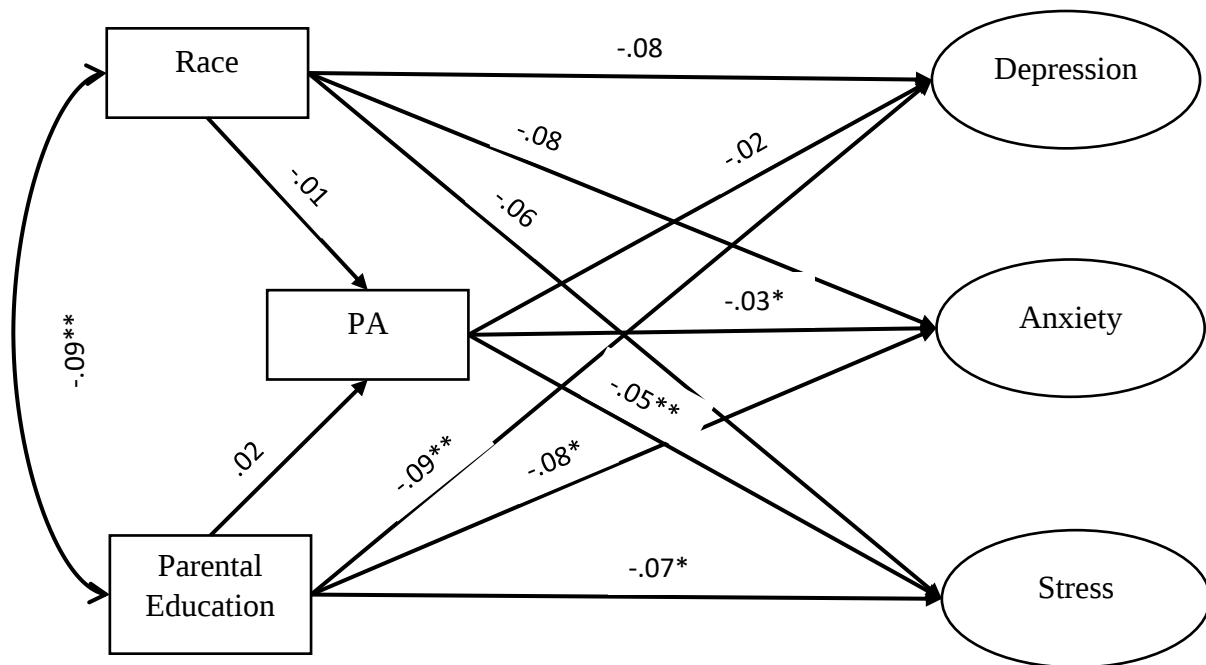


Figure 3 Model Test Results

Note: * = $p < .05$; ** = $p < .001$

Examination of Differences between Study 1 and Study 2

Although there was no intention of comparing study 1 and study 2 results, the questionnaire structure and timeframe of data collections warranted such a comparison among the race variables. Data collection of study 1 occurred before COVID-19 restrictions were put into place and lasted throughout the remainder of that same semester (Spring 2020; over 90% participated before COVID-19 restrictions were put into place). Study 2 was done during the entire time that COVID-19 restrictions were in place, which was almost a full year before the beginning of data collection. Significant differences were observed across all mental health variables, with results listed under (Table 8).

Table 8 T Test Results Comparing Study 1 and Study 2 Participants on DASS-21

	Study 1			Study 2			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
Depression	457	3.67	4.39	481	5.00	5.16	-4.27	<.001
Anxiety	448	3.46	3.60	481	4.95	4.99	-5.25	<.001
Stress	447	5.68	4.56	481	6.56	4.46	-2.96	.003

Very surprising, when comparing non-White participants between study 1 and study 2, no statistically significant differences were found across any of the mental health variables, although significance was approached with anxiety ($p = .052$) (Table 9).

Table 9 T Test Results Comparing Study 1 and Study 2 Non-White Participants on DASS-21

	Study 1 Non-White			Study 2 Non-White			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
Depression	101	4.24	4.94	76	5.07	5.24	-1.08	.283
Anxiety	99	3.78	3.76	76	5.20	5.37	-1.96	.052
Stress	100	5.86	4.48	76	6.53	4.48	-.92	.358

However, when comparing White participants across study 1 and study 2, statistically significant differences were found across all mental health variables, with anxiety having the largest difference (Table 10).

Table 10 T Test Results Comparing Study 1 and Study 2 White Participants on DASS-21

	Study 1 White			Study 2 White			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
Depression	356	3.50	4.22	405	4.99	5.15	-4.36	<.001
Anxiety	349	3.37	3.56	405	4.91	4.92	-4.95	<.001
Stress	347	5.63	4.45	405	6.56	4.47	-2.87	.005

For the final analysis levels of depression, anxiety, and stress were compared across study 1 non-White and study 2 White participants. Here, the only significant differences were found with anxiety levels ($t(188.86) = -2.51, p = .013$) across non-White study 1 participants ($N = 99, M = 3.78, SD = 3.76$) and White study 2 participants ($N = 405, M = 4.91, SD = 4.92$) (Table 11).

Table 11 T Test Results Comparing Study 1 Non-White and Study 2 White Participants on DASS-21

	Study 1 non-White			Study 2 White			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
Depression	101	4.24	4.94	405	4.99	5.15	-1.32	.189
Anxiety	99	3.78	3.76	405	4.91	4.92	-2.51	.013
Stress	100	5.86	4.48	405	6.56	4.47	-1.37	.170

Qualitative Assessment of College Student Experiences (College Experience Survey)

The College Experience Survey included a total of six free-response questions asking about one's most stressful obstacles, how those were overcome, if on-campus resources were used, suggestions for improvement of on-campus resources (if the obstacle was/not overcome), barriers to on-campus resources, and what could have prepared one better for college. In this

section the three most common codes from each question are reported, in addition to other relevant codes.

Question 1: Obstacles related to being a university student

The first question in the College Experience Survey asked about the biggest obstacles participants faced since entering college. As expected, most students were worried about their *academic success*. This was by far the most common code. Quotes representing this were mostly straightforward and discussed aspects of academic life such as an assignment, class, timeframe (e.g., finals week), or academic staff (e.g., professor, teaching assistant, etc.). Example quotes were, "stress about giving a presentation or public speaking", "managing classes, tests", and dealing with "Student Teaching". Additional responses were more particular to common obstacles faced due to the adjustment to life during a pandemic, as exemplified by, "online school. Since beginning lockdown I have found my motivation and focus have hit a rock bottom from spending almost all my time in my room on my lap top (*sic*).” A similar response was, “Watching online lectures in timely manner, keeping due dates straight, exam/quiz Performances, going to online meetings.”

The second most common obstacle was about *social relations*. Some responses here were “Meeting new people”, “Maintaining good and healthy friendships”, and “Social encounters”. Additionally, there were more specific responses in relation to social interactions. A good representation of multiple obstacles this could entail was, “Difficulty making friends, finding community, and forming meaningful relationships”. One quote dug a little deeper by identifying a serious issue: “dealing with a stalker and having to go to court for a restraining order”, although most dealt with wanting to establish better relationships.

The third most common code was *balancing multiple obligations*. This code was often in combination with the codes mentioned above, as well as a multitude of others. Most straightforward were the responses, "Finding the time to do everything that needs to be done in the day" and "Managing time." Examples of combinations of this code with academics and others was "Balancing scheduling of academics and athletics" while a combination of the top three quotes was "Balancing school, sports and social life". The social and academic codes appear in response to additional questions reported below, showing their inherent importance to college students.

Additional codes chosen for presentation are mental health and aspects related to the pandemic. Mental health was chosen due to its large number of uses, falling just behind balancing of multiple obligations, with a large gap to the fifth most common code. Here, like above, participants were mostly straightforward, stating "my mental health/depression", "Panic attacks, depression, anxiety", and "taking care of myself mentally and physically". Others identified the cause of their mental health struggles, "Self identity (*sic*) concerns Anxiety/Depression" and "1. Body image/weight 2. Mental health issues", while one participant combined a pandemic related adjustment with their mental health, saying "Isolation mixed with my mental health".

The pandemic related code was chosen because of the current longstanding issues that most individuals, especially students, are faced with. The following quotes are relatively self-explanatory as participants included how adjustment to the pandemic affected them or what specifically about this transition was burdensome. These responses included "Deciding whether or not to move home to Arizona when the pandemic started in March of 2020", "COVID with no school breaks at all", and "COVID transition, from in class to on-line prompted my initial

withdrawal from classes until I could recalibrate a routine that suited me and our family.” As some students listed the above as their most stressful obstacles, others were able to use those same obstacles as methods to overcome other obstacles.

Question 2: Ways in which the obstacle was overcome and on-campus resources utilized?

Participants indicating that they overcame their most stressful obstacle were prompted to answer the question of how they did so and what on-campus resources aided. The feedback from this question includes methods used to overcome one’s obstacle and/or what resources helped with this. The most common way of overcoming one’s obstacle was by simply *working through* it. Students that used this code did not use, or did not indicate that they used, on-campus resources, as exemplified by “I didn’t get help from any resource, I just used my own growth to sustain me in my school and figure out what’s important”. Many responses were more detailed, talking about how participants dealt with their issues: “Making a schedule for myself and pretending I HAVE to watch each lecture in the time that class would be regularly scheduled.”; “I kept applying to jobs until i (sic) finally found one that fit my situation, and not resources from campus were used.” One quote stuck out, though. The reason for this is that it talked about an important issue raised during the focus groups, namely “getting out of one’s comfort zone”. This quote also includes the next most common code: “I got out my comfort zone and took the initiative to talk to people and ask to hang out. I also distanced myself from people that I felt weren’t good for me. No resources just talked to my loved ones.”

Social interaction was the next most common code. The quote, “I got through it by talking about it. Opening up about what was going on helped me heal” seems to mirror many students thought processes of how this method helped them. A similar response also includes the use of an academic resource: “I go to my friends for support. Talking through them helps. I also

talk to my advisor. He is very helpful and always makes me feel much better after talking to him. I mostly reach out to the people I know." Other participants mentioned how social collaboration helped them with working through their obstacle, like "I just used the support of my friends and we all studied together and got through it together."

The third most common code, similar to the top code, related to *not using on-campus resources*, although this was explicitly stated in these codes. Straightforward, participants mentioned, "I didn't get help from any resource, I just used my own growth to sustain me in my school and figure out what's important", "I didn't give myself much alone time. I didn't look for resources", and "My program is 100% online so I do not have access to the campus".

The use of mental resources was very close behind the code for not using on-campus resources, which is why it is added here. Again, quotes gathered here were very straightforward, like, "I saw a therapist through (large university) athletics and relied on my family from home to support me", "Therapy", and "I used the (mental health resource at large university) services at (large university). I (used) group therapy specifically."

Quotes from the most (i.e., working through) and third most common code (i.e., not using on-campus resources) seem like they do not aid much in learning about how to improve on-campus resources or how to make student life easier. However, interpreting these results may aid us in realizing that most students simply do not use resources provided. There are multiple reasons for this, addressed in a question below. One positive interpretation of this may be that students are learning how to be independent, although this should not be assumed.

Question 3: Suggestions for on-campus resource improvements that could have helped

After indication of overcoming their most stressful obstacle, participants were also asked to give suggestions on how on-campus resources could have better served them through that

process. Here, the two most common resources mentioned related to mental health and academics. Under *mental health* the two most common suggestions being an improvement in availability and accessibility. Participants mentioned an increase in “‘stress relief’ events on campus like meditation or yoga classes or other activities that help decrease stress temporarily” as well as “lower waiting times in the mental health center”. Additionally, many student-athletes mentioned, “more mental health resources within the athletic department”, “Longer counseling sessions than 15min through the athletic department”, “more one-on-one sessions with psychologists (if an athlete needs that)”, and “Having a sport psychiatrist”. Participants also mentioned a general need for increased accessibility to mental health resources. One specific example was, “More accessible counselors. I could’ve used professional advice/opinions, but they were booked two weeks out.” Another example was, “Have a more welcoming and supportive staff for students seeking mental health treatment.” Other suggestions included “resources that might involve like free yoga classes or other things to help with mental health that would have been nice to have available, especially freshman year living in a dorm.” Finally, several suggestions related to a general increase in the social environment like “Reducing the stigma behind getting help and talking to someone,” and, “Discuss mental health more. There is still a lot of stigma and seeking help shouldn't be hard, but it is”.

Under *academics* the most common suggestions were availability and completely new ideas. Suggestions included “more help sessions or labs like the (Mathematics Learning Center)”, “more office hours per professor”, “Promote help rooms for students academically and make TAs available”, “increased hours for the academic success center”, and “More access to in person tutors”. There were additional suggestions that included justifications for why these were mentioned. These included “(Mandatory) work time. I feel if I was forced to go sit somewhere

with some teammates and do work I would get a lot more done.” Another was, “I think at times professors need extra help to organize and grade. On campus resources of graduate assistants or teaching assistants should be more readily available for the professors to help them out with their work load (*sic*) so they can concentrate on teaching well and grading in a timely manner.”

Several suggestions also blurred the lines between availability and new ideas. These included “More available study spaces that are designated, besides the library”, and “organized study groups for challenging classes.”

The third most common code was *sport related*. Many of these responses were addressed above under the mental health resources, with one more added here: “i (*sic*) am uncomfortable with therapy but maybe that would have been helpful. Or someone in the sports realm to talk to about (their sport) stuff.” On the other hand, there were a few distinct suggestions. Included were more general suggestions of, “Being made aware of counseling. Either with a sports psychologist or a counselor”, and, “more open conversations with athletic officlas (*sic*)”. There were also some new ideas as well, like “someone to help plan out how your day should go while being a (*sic*) athlete”. The final new idea was one that was discussed in the focus groups as well, which is the establishment of an “Athlete’s dining hall”, where athletes can meet other athletes from different teams in a less stressful atmosphere.

Due to its similarity with sport, we also report suggestions for PA here although the number of those were slim. The exclusive suggestions here were all related to the monetary burden of being able to use the PA facilities at the large university. Primarily, participants discussed this in terms of intramural participation and weight room use. One quote that seems to be packed with emotions regarding this is:

I would have been more successful in overcoming stress if the gym membership cost was more affordable. It was hard to justify spending more money on something that I was only able to use a few times a week, especially when I was already stressed out. The financial burden of having to pay for the gym added some stress even though the purpose of going to the gym was to take stress away.

Another comment discussed additional activities around campus as well, “More sports and physical activity events that are free and available to all students on and off-campus”.

Question 4: Suggestions for on-campus resources improvements that should help

Participants that did not overcome their most stressful obstacle were asked a similar question to the previous one, with the most common codes being mental health related, followed by academics related, and general availability. Several of the *mental health* comments were positive, reported below. Some suggestions there, however, were

In all honesty I think that (large university) has done a good job stopping the spread of COVID here but not a good job in taking care of students' mental health. They took away spring break and made stuff due even on Thanksgiving. I think more mental health days were needed, as well as resources to talk about pandemic anxiety.

“(Mental health resource at large university), they were not available at the time, there was a 3 month (*sic*) waiting list. I think the service can be improved by adding more therapists.” Some general issues, without offering specific suggestions included, “I have tried using (mental health resource at large university) and I had an awful experience and would never go back”, “(mental health resource at large university) would’ve been helpful. I know it’s available, but I don’t want to have to deal with insurance”, “(mental health resource at large university) - could be useful

but having a phone call consultation but difficult for someone who gets anxious talking over the phone”. Several students struggled with the long wait to be seen by a mental health professional as exemplified by, “Therapy. It is available, but it’s hard to get in within a reasonable amount of time. I ended up going elsewhere for therapy because they were able to help me when I needed it, not a month or two from when I needed it.” Additionally, several mentioned that they think the mental health services would have been beneficial although they did not seek them out. It would be interesting to have a follow-up question regarding these responses. Some also indicated the usefulness of reminders, like “Trained therapists. Did not seek any out. Perhaps promoting their availability would help their usefulness,” and, “The sports psychologist is somebody who I definitely think will be able to help me. They are available to me, but I think that letting athletes know that they have that option more often would be helpful.” A similar issue was raised in the focus groups, although individuals indicated that an overwhelming amount of information and reminders is received through email, with the suggestion that in-person contact, and reminders would be more beneficial.

It was also important to report on the positive responses related to mental health resources, as there was a good amount. Interestingly, some of these contradict responses mentioned above. One of these responses was, “(mental health resource at large university) has helped me, they were available for the most part. I think it was stressful for them as well because we all went online.” Another positive response was, “I previously have utilized (mental health resource at large university), or counseling, here at (large university). This was definitely a beneficial service to getting through difficult situations,” while another student mentioned a different mental health resource: “I went to Center for Sexual Assault survivors for a while, then

(mental health resource at large university), and was put on medication through (health center at large university). They were all very helpful.”

Again, due to the current struggles, it seemed important to include responses relating to the COVID-19 pandemic. Many responses indicated a decrease of previously used resources due to COVID. A quote that summarizes this well was,

Normally I was able to go to sporting events, the bars, or play rec soccer with friends. This year when I was most stressed, I couldn't do any of those activities to get my mind off of it which I do think made it much worse. It made me over think a lot.”

One final quote, however, also includes issues that the participant related back to their university by saying “There is no way to meet people in these Covid times, the school hasn’t done anything for student engagement. Not even given us a mental health day when they took away our spring break.”

Question 5: Barriers to Seeking Resources

Asking about barriers to seeking on-campus resources was the next question. This was immensely important to ask to receive more concrete reasons why participants may avoid resources. The most common code here was that there were *no barriers*. Most participants simply wrote “no” while some gave a little more detail, like “No, I think that (large university) does a pretty good job of making sure we have everything that we need (in) relation to mental health,” and, “There have not been any barriers that caused me to not seek assistance.” This is clearly a good sign.

The second most common code related to *personal reasons* as barriers. These can be divided into discomfort with seeking resources, not feeling like resources are necessary, and

personal reasons in general. Examples of the latter include, “I don't typical (*sic*) like to ask for help especially when its (*sic*) personal,” and, “Myself. I tend to avoid asking for help because I am an independent person and enjoy things on my own.” This touches on another aspect that was discussed in the focus groups. Participants mentioned that their generation does not like to ask for help because it makes them feel weak or needy. Additionally, it touches on the topic of stigma, also discussed under the focus groups results, and above. However, it brings about a long-standing view about seeking resources, mental health ones in particular, and should be addressed more around college campuses. Further responses under the “personal” code included, “I also have a hard time admitting that I struggle. I don't like to think about it much”, “Just ‘the want’ to reach out to a third party when I know I have my friends I can lean on,” and, “Covid-19, don’t know where to find resources or don’t feel comfortable sharing information with those I’m not close with”. This leads to the third most common code, which is related to the pandemic.

Under this code many participant responses were similar to “COVID-19”. Others offered more insight, although most of these related to the reliance on online interaction: “Online schooling has been a huge obstacle in seeking assistance”; “I do not like meeting with tutors online so I do not even try to get help”. These codes were closely followed by a lack of time, fear of something relating to seeking help, obstacles related to one’s mental status, lack of awareness of existing resources, and lack of access to resources.

Question 6: What could have prepared you better for university?

The final free-response question asked what participants thought could have prepared them better for their transition from high school to college. This was asked to get a different perspective on how current campus resources could be made more beneficial. As expected, the most common code was *academics*. One student indicated that they wished they were more used

to the workload of college, “Being more prepared for the amount of studying involved in college courses.” Similar is the focus on workload as well as “online formats of classes or using more online resources for classes.” Another seemed to put the blame on themselves by indicating that they should have pushed themselves more in high school: “taking more honor and AP classes”. The final quote reported dealt more with the extension of academics beyond the classroom, while it also dives into the code of independence: “more discussion on how to interact with professors and understanding how to take advantage (of) the resources available to you”.

The next most common code was related to participants feeling like they were *adequately prepared*. Many participants simply said so, or wrote no or NA. Others mentioned, “Nothing, there is a learning curve to it, nothing can really prepare you, as long as you can adapt to situations you should be fine”; “I don't think many things can prepare you for college because it is so different. I think (large university) offers a lot of programs that make the transition a more comfortable time if you use them.” Both quotes indicate that a learning curve is to be expected when entering college although the former quote may hint at a need to learn how to adapt appropriately. The latter highlights the importance of using on-campus resources.

The third most common code dealt with *managing one's time*. Here, participants mentioned an aspect that was one of the top codes related to obstacles faced, namely balancing time. This is exemplified by “If I was taught in high school how to balance school and my social life. Tips on how to do this would have been helpful” and

I think learning more about time management. I went from never studying in high school to studying a lot my first semester, and did not know how to time manage to focus on all of my classes, plus make time for working out, eating, or just having free time for myself.

Another mentioned the lack of being able to prepare, as also mentioned in the previous code, by saying that “Your schedule will change in a way that you could never experience in high school.”

Independence was the fourth most common code, very close behind managing one’s time. Participants mainly discussed independence in general, as seen in the quotes of, “I think high school needs to be more geared towards teaching yourself honestly. Nothing is handed to you in college and thats (*sic*) something that a lot of individuals struggle with.” Another highlighted this in relation to seeking out resources, “Stressing the importance that this next step will require you to hold your own hand. We can receive help, but it is up to us to seek it out.” Others indicated that their independence is largely coupled to living experiences, indicated by, “Experience living on my own prior to my freshman year (for an extended time)” and “More freedom in my home life because once I got to college I had all of the freedom I wanted and wasn't prepared for it.”

Quantitative Questions of the College Experience Survey

The final three questions asked, as part of the College Experience Survey, were about motivation and PA benefits. The first asked what one’s main source of motivation is while attending college. Selections were as follows, ordered by most to least selected option: Yourself (e.g., doing it for yourself, personal fulfillment, etc.) (22.2%); A good future (20.6%); Your support (e.g., family, friends, etc.) (15.6%); Career (e.g., job, financial stability, etc.) (14.8%); Other (2.3%).

The second question asked if PA has helped the participant cope with stress, to which 69.9% answered “Yes” and 5.8% answered “No”. If the response was “Yes” then participants were asked to rank in what ways PA has helped them cope the most. Selections were as follows,

ordered by most to least selected top option: Giving me time away from stress or allows me to relax (23.7%); Allowing me to interact with my friends (14.8%); Allowing me to release stress or release emotions (14.6%); Allowing me to accomplish something (8.5%); Helps boost my mood or have fun (6%), Other (.6%).

Focus Groups Assessment

Table 12 Focus Group Characteristics

	Focus Group 1	Focus Group 2	Focus Group 3	Focus Group 4
Participant total (university)	4 (large university)	3 (large university)	4 (small university)	1 (small university)
Type of PA	Athletes	2 athletes, 1 personal PA	1 no PA, 3 personal PA	Athlete
Race	Black	White	White	White
Student type	Undergraduates	Undergraduates	2 undergraduates, 2 graduate	Undergraduate
Additional characteristics	2 female, 2 male 1 transfer, 1 foreign	2 female, 1 male, 1 in a sorority	3 female, 1 male 2 adult learners, 1 coach	male

Table 13 Focus Group Participant Number and Characteristics

Participant Number	Participant Characteristics	Focus Group Number (school)
11	Athlete, Black, Undergraduate, Male	1 (large university)
12	Athlete, Black, Undergraduate, Female, Transfer Student	
13	Athlete, Black, Undergraduate, Female	
14	Athlete, Black, Undergraduate, Foreign born	
21	Athlete, White, Undergraduate, Female, Graduated	2 (large university)
22	Personal PA, White, Undergraduate, Female, Graduated, Sorority	
23	Athlete, White, Undergraduate, Male, Graduated	
31	Personal PA, White, Graduate, Male, Adult Learner	3 (small university)
32	No PA, White, Graduate, Female, Coach	
33	Personal PA, White, undergraduate, Female	
34	Personal PA, White, undergraduate, Female, Adult Learner	
41	Athlete, White, Undergraduate, Male	4 (small university)

Two semi-structured focus groups were held with students from the large and two with students from the small university to discuss further obstacles with on-campus resources, potential strategies for improvement of on-campus resources, as well as related topics. Characteristics of each focus group can be found in Table 12 while identification numbers used for reporting on each participant are under Table 13. Participants were made aware that their experience is unique and valuable and that they are the expert of that experience. The introduction also addressed that information discussed will not be shared outside of this environment and information shared in the report will be deidentified. The informed consent form included information on how to access mental health resources if the need arose during the focus group. Participants were encouraged to keep their cameras on at all times and only unmute when speaking. Furthermore, discussions were allowed to go beyond the preselected questions (Appendix D). The preselected questions were intentionally vague to allow participants to discuss aspects significant to their own experiences. The primary investigator's sole purpose was to guide the discussion.

The findings from the focus groups are reported based on themes identified. These themes include aspects related to the pandemic and subsequent changes, mental health, diversity, positives, general suggestions, suggestions for new resources, and advice for others.

Pandemic Related

With the current obstacles faced by most students, relating to the pandemic, lockdowns, and overall change to lifestyles, it was necessary to address adjustments faced by the focus group participants. This was the first topic of discussion. Of course, a vast majority of subtopics deal with these negative outcomes; however, as can be seen below, there were also some benefits.

Negatives Related to the Pandemic

Subthemes discussed in the focus groups included negative but also beneficial changes due to the pandemic. Regarding negatives, participant 11 talked about the decrease in effectiveness of “fueling stations (locations where athletes can grab food on the go)” and mentioned that “it was just kind of hard, harder especially like me moving into a (*sic*) apartment this year. Having to cook for myself and stuff like that”. Similarly, participant 41 felt that dining food availability was not ideal due to “staff at the dining hall were hesitant to hand out larger portions, or get more food if you wanted it, strictly because they just don't like making it, I guess. And it's not like you can go back up for seconds.” The struggle here likely stems from the buffet style setup that students are used to. This was changed due to the pandemic, only allowing one trip for food. He also mentioned that it was difficult to access the health center: “everything was just hard to do because you had to schedule appointments through (health center online services).” Specific to athletes, he gave the example that it took one of his teammates half a semester to find out how to access athletic trainers. He also mentioned the lack of communication causing this: “There's just a sign that would say no walk-in appointments and that was it.” He followed that up by mentioning that the process of making an appointment with the athletic trainers was not difficult, as one simply had to use an already established website for it, but not everyone was aware of this process.

Participant 14 also mentioned issues related to further academic and professional advancement due to a lack of social interaction resulting from COVID-19 restrictions: “professional development (...) was a lot harder, you know. Like, it's better when it was in person, you know, you could interview some person or, like, you know, coffee sort of things like that”. Similarly, he mentioned “I understand the flexibility that, you know, virtual schooling

gave us”, but he missed being able to engage with people through “discussions and work on projects as a group”. This was something also mentioned by participant 23. He needed more social interactions outside of only being able to talk to one’s roommate, indicating “just places where you can see someone else's face and have an interaction” which he felt would help with his mental health. Participant 22 connected those issues with her own experience: “I’m in a sorority and a couple of other clubs on campus, so I did not ever get to see my friends in those places because we would have chapter on zoom”. A suggestion regarding the lack of social interaction was raised by participant 41. Rather than “just being locked in a room the entire time” he would have liked to see added outside seating near dorms. He also highlighted the struggles of upperclassmen being accustomed to a particular lifestyle in college: “so, they’d (seniors) be frustrated that there's nothing to do on the weekends, and they would go out of the way to do everything to make sure that they could have that previous lifestyle.” This resulted in neglected schoolwork to ensure “getting the full college experience that they used to have.” He also mentioned that with asynchronous class “a lot of students in my classes would complain that they have a bunch of work to do at the end because they just did not structure it previously”, highlighting struggles with managing their schedule.

The most drastic experience related to the pandemic was by participant 31, who received a leave of absence and dropped out of college. He mentioned that the adjustment to learning would not have been feasible for him “Because ultimately at the end, we're reading books, right? And that's not to minimize the significance of our academic procedure, but that's really what it is, right?” His concern here was that he will primarily have to learn from teaching himself rather than being taught by professors. Additionally, he identifies potential obstacles that younger

students might have with this adjustment, stating that “it's a kick in the chest to say, ‘oh by the way, you're gonna do all this (transitioning to college) stuff with a pandemic’”.

Physical Activity During the Pandemic

Although athletes at the large university were still able to participate in their sport, there were some changes that affected them negatively when it came to PA, as addressed by participant 23. He mentions that PA used to help with stress relief but now sometimes contributed to stress through having to “participate with people who maybe were or were not making the right choices”, related to protecting themselves from COVID-19. He went on to identify the struggle with the inability to use the campus pool for workouts when injured. The overall worry of contracting COVID-19 was echoed by participant 21, mentioning the “huge (...) stressor” of COVID-19 spreading within her sports team. Participants 12 and 13 addressed another issue dealing with if an athlete was exposed to another individual diagnosed with COVID, often resulting in a 10-day quarantine in a nearby hotel. Participant 13 identified further obstacles relating to this adjustment. She indicated that it was “extremely difficult to stay active if you didn't have COVID” which affected mental health because athletes were not allowed leave or “walk around” when they wanted. Precautions were set in place for individuals required to quarantine. One of these, particularly burdensome for athletes, was that individuals were not allowed to raise their heart rate due to potentially life-threatening side effects of COVID, which participant 13 is likely alluding to.

On the other hand, non-athletes had a hard time finding ways to engage in PA since many, or all the gyms and areas for PA were inaccessible. Regarding this, participant 22 mentioned increased stress levels due to being unable to work out “because I use physical activity as my stress reliever”. She struggled with trying to compensate by working out at home,

however, this was not as beneficial. Some pandemic related obstacles also bled into the academic realm for all of the participants.

Academic School Work During the Pandemic

A significant number of issues were connected to the pandemic and classes taken through the university. For example, participant 23 mentioned that some students “had to purchase a lot of stuff” for their classes because they were unable to use equipment provided by the university. So, “the lack of resources definitely took a financial toll to some people with classes.” He went on to mention, “You also don’t have access to the lab materials and other classes. So, if you’re in a, you know, a chem lab, or a bio lab, or kinesiology, you can’t do a lot of the hands-on stuff”, to which participant 22 added,

I am a kinesiology major and basically all my labs this year were just like cancelled and all over on zoom and you can't learn anything from that for a lab on Zoom (....) I learned how to take blood pressure on myself, at home, over zoom because that's what I had to do. And I had to buy that myself (....) stuff like that will add up on costs. And so, I would say definitely that was by far the worst part of having class online.

Later, she also mentioned that it may have been unnecessary to have all classes online because many of her peers, including herself have been vaccinated since January because they work in healthcare. Further issues stated by participant 11 related to tutoring, which was done virtually “so like you’ll sit there and do your work and your tutor be off, like, doing something else on their computer. Like, is there, but they wasn’t (*sic*) there” he went on to mention that “It just made me feel like I wasted my time”. Participant 14 added the lack of study areas like the library, which were not available. The only option he then had was to do schoolwork in his apartment which made it less enjoyable. He suggested that available spaces in the athletics

department would have been beneficial. On the other hand, fortunately, having to deal with the pandemic also had a few positive outcomes for some of the participants.

Benefits of the Pandemic

Although there were negatives, some participants contrasted those with positives they noticed. For example, participant 32, a collegiate coach and graduate student, contrasted her own experiences with those of her student-athletes. For her a benefit was increased flexibility due to online courses and not having to commute. Conversely, she recognized that for athletes “it was very hard for them to stay focused and manage their time, because they're so used to having everything planned out for them.” She goes on to mention that “we had a lot of athletes that were normally very smart and had good grades, just not do that.” A similar quote related to her own experience came from participant 34 who initially dropped out of college. She entered college again years later with the pandemic actually making her transition easier: “So, I came back to school to finish my degree this past semester. And the only way I would be able to do that is because of covid and everything was online”. However, she also indicated that this situation would have been a lot more difficult if she were to start college at a younger age due to the lack of social opportunities, an aspect under the College Experience Questionnaire indicated to be very important.

Participant 33 had a more or less “normal” routine throughout the pandemic while in college as she had “mostly in person classes in the fall and spring semesters. So, I feel like I wasn't as affected by some of the larger majors by having all online. (...) had a very nice routine for myself”. She seemed very grateful, but also identified an issue that she felt strongly about regarding the spring semester schedule, identifying that “definitely felt like a lot because there were no breaks. There was no spring break because of covid or anything like that, and they also

didn't give us any days off.” This clearly highlights the importance of her needing time off during the semester, even if it were just single days.

Participants 11 and 12 focused more on beneficial athletic and academic outcomes due to pandemic changes. Participant 11 stated improved recovery for his body because he was able to “relax a little bit more this year.” He compared this to the previous year where we would wake up at 6:30 AM for class and would not return home until around 10 PM, with enough time to shower and “going right back to sleep and doing all over again”. Participant 12 focused on her academic progress and that this was her academically most successful semester, “because I don't have to, like, wake up super early. It's kind of like, I have my own schedule.” Participant 21 echoed this with having more online classes resulting in “not having as much going on actually, (...) less stress but then there was just, like, a new type of stress added to, like, sports”. The added stress was in connection to fear of contracting COVID-19 and precautions related to that. Similarly, participant 23 mentioned, “I’m at work right now and I just take this time off and come outside and have to zoom instead of having to go home or go to a different place on campus”, adding that the lack of “transition times” from one obligation to another result in more free time. He also mentioned that advisors and office hours were “more accessible just, like, with a busy schedule”. This benefit came from the fact that “they did not have set office hours, so you could just set them individually with them”.

Summary

In relation to COVID-19, participants identified overall negative events like the decreasing usefulness of some specific resources like food, academic and professional development, a general increase of difficulty with college, as well as less social interactions. The participants also mentioned the increased worry to be exposed to COVID-19 based on teammates

in their sport underestimating the virus as well as the burden of having to quarantine if exposed to someone who has the virus. On the other hand, individuals who are not student athletes struggled with the ability to participate in PA due to a lack of opportunities and facilities. Academically, they mentioned less support from some resources and obstacles related to courses. Finally, some benefits included having more freedom and more time to commit to different activities. Unfortunately, obstacles exist beyond those related to the pandemic.

Mental Health

This section includes the discussion of mental health in different settings, although more focused on on-campus resources; however, it does not include mental health as related to COVID-19.

Mental Health Resources

Several aspects were discussed here with the first one dealing with mental health resources. Participant 13 emphasized the need for more time when meeting with a professional, stating that the allotted 15 minutes are not enough to get to know each other as well as discuss one's problems. To this, participant 14 added that not only are these appointments with mental health professionals and physicians short, but that waiting times between appointments can last weeks. Similarly, participant 13 is hoping for "increased availability" for counseling center meetings: "okay, well you can see someone in, like, 10 days' and by that point the problems solved and it's just, like, fizzles out."

Another example about issues with mental health was given by participant 41. His issues were interconnected with his situation while also struggling with resources to help him: "I was kind of stressed the entire time and with the whole covid situation, not having a lot of face-to-face interactions, I actually was, like, gonna reach out to the sports psychiatrist or just a

counselor on campus.” Unfortunately, no one knew about in-person availability of those resources, which “was kind of frustrating, not knowing what I can do to, like, actually talk to someone about it and, like, work out problems on my own.” Later in the conversation he addresses this with, “I’m still not even sure if we have one (athletic counselor) because I haven’t found someone that knew the answer. I probably should just ask (head coach), but, you know, didn’t do that” while offering suggestions on where this counselor could be located. Participant 12 also mentioned the reminders about mental health resources, although helpful, do not seem genuine. Face-to-face, rather than email or text, would be preferred and would “come across as more genuine.” Of course, when discussing obstacles to mental health, stigma is still a familiar phenomenon.

Stigma Related to Mental Health

When talking about an on-campus environment, participant 23 identified the issue with stigma, identifying the need to normalize that “we don’t necessarily know everything even though we think we know everything”, specifically when transitioning from a highly structured high school environment to college. The struggle with stigma and not knowing things can also show up when,

looking for help, just in guidance, or direction, or whether you’re looking for help with, you know, navigating a cafeteria and learning how to eat on your own without your parents cooking for you, or navigating, you know mental health.

When asked if he had a suggestion to overcome that campus wide stigma, he suggested an online course he was required to take which forces one “to learn and be exposed to issues that are, that are happening. I think that’s one of the best ways to take away the stigma is just having that interaction, that exposure.” Like participant 23’s discussion of stigma, participant 32 mentions

that regarding his mental health he was aware of resources but “it just didn't occur to me that, like, I can just go talk to somebody for free on campus” until someone told him to. He adds that “a big part of why I never asked anybody about it was because I didn't want to admit that I needed the help.” This is something that he feels is common across current college students and is partially caused by social media. Although it seems like there are only negatives associated with mental health around campuses there were aspects discussed that do aid it, which are discussed further down. Additionally, one example that sticks out in support of mental health is discussed here.

Example of Support

One portion of the conversation with participant 41 that really stood out was him sharing an example of a professor who went out of their way to help their students. He mentions, “they actually canceled what we were doing for the class that day, on a Friday, and they were just making us do yoga because everyone seemed so tense to her, and it actually helped”. The reason this stuck out was because, as discussed in the “suggestions” section, a topic that came up a lot was that there needs to be better communication. Better communication between departments and staff, but also better communication between staff and students. This example, given by participant 41, highlights what good communication can breed. If the professor did not communicate with their students, they would not have been aware of the students’ difficulties on that particular day.

Summary

In summary, feedback about mental health resources around campus entailed that there is a need for increased availability and that students might not be aware of what resources are available to them. Other aspects discussed were the lack of genuine reminders about mental

health resources with in-person communication of these resources being suggested. Stigmas around campus and the importance of communication and care from professors was also of importance to participants.

Diversity

The topic of diversity only arose within the first focus group (large university). The depth of this discussion had led to the identification of its importance and subsequent presentation in this report. The current focus on the issue of diversity added to the importance, especially as universities have significantly increased resources related to it. As these conversations are primarily participant led, it is expected that diversity, racial diversity in particular, was a large topic of discussion with focus group one. This focus group consisted of exclusively black participants, who were also all athletes, while all other focus groups were exclusively white.

Diversity, Equity, Inclusion Meetings

The primary resource that participants talked about when they addressed diversity were diversity, equity, and inclusion meetings sponsored by the athletics department. Participants acknowledged the increased efforts of their university and are hoping that those continue and increase over time. Participant 13 emphasized this by individuals not paying attention if they cannot relate, where conversations across teams, rather than just within independent teams, could counteract that. His thought here is that there may be more support for minorities who are in the vast minority on their team. This was reinforced by participant 12. Her primarily black team already had those conversations with a primarily white team, but she also indicated that those need to be continued as they also aid in expanding social relations. This prompted inquiry about if their further thought was that combining multiple teams, especially a diverse and less diverse team, would also allow for an increased sense of support and understanding of all minorities but

especially of those on the less diverse teams. Both, participants 13 and 12, agreed. They also agreed that this helps non-minorities see and understand the different perspective, but it also helps minorities by learning how to verbalize the issues they face, in a safe space. Participant 13 suggested an open forum where “athletes can talk about things that they struggle with, with their teammates and just coaches (...) forum to voice your opinions, struggles, like things that you've had with the team”, emphasizing a mandatory attendance by coaches. She also raised the point that this will be difficult but cites a reason as to why she thinks it is important: “I know our team struggled with that and never really felt comfortable sharing some of the things that they struggled with, with the coaches.”

An example of a benefit of having these meetings was brought up by participant 11. It went beyond the specific goal of the diversity meetings that his team had: “coming into this year (...) we support each other much more so, like, the, the racial meetings, like, definitely helped a lot.” Participant 14 adds, “just building experiences and building, like, you know, memories” and “just being uncomfortable sometimes, like, you know, would make people be closer together”. This feedback led to a discussion on how to further improve diversity.

How to Improve Diversity on Campus

The primary resources discussed in this section were the above-mentioned meetings. Furthermore, there were some suggestions regarding how to improve diversity in general around campus. Fortunately, this was not exclusive to racial diversity. While talking about anti-racism, participant 14, who is the only minority in his team, mentioned that some of his teammates indicate that “‘I'm not racist’. While they (...) could do a lot more to get involved and spread awareness.” He believes that having other teams or just individuals outside of one's own team be present and add to the discussion would be very beneficial, as mentioned above. He agreed that

being exposed to different perspectives, outside of the common individuals that people interact with, would help many understand and appreciate those views. He also mentioned other examples of perspectives based on “gender or sex, or like even, even sports themselves.”

When the group was asked about suggestions on how to encourage people to get out of their comfort zone one response was, “Maybe emphasizing that getting out of your comfort zone will only help you. (...) So, you'll grow from doing what's not normal. So, it's like you want to, you know, evolve.” Subsequently, participant 13 disagreed when asked if mentioning that getting out of one's comfort zone will be enough, with “when you get out of your comfort zone, you get to know each other better thus having closer relationships and when you have a closer relationship (...) you win, you win titles, you win championships (...)” Participant 11 bluntly stated that it is not enough to just mention these benefits as some might struggle to get out of their comfort zone, on which Participant 14 built with “I feel like, that, enforcement is gonna help a lot, but then also like putting, you know, resources into place that, you know, would allow people to get out of their comfort zone (...).”

One athlete mentioned that they, as a primarily minority group, are constantly under the spotlight with their mistakes being interpreted as worse compared to other groups. This prompted the question of how to overcome that “spotlight effect” to which participant 11 stated, “the biggest thing for me is that people just have to accept and understand that like getting out of your comfort zone is not easy” and that you need to take one step at a time. However, he also identifies that everyone, not just non-minorities, must step out of their comfort zone. An extension of this came from participant 11's identification of a method that should allow for safe places for inquiry about others' perspectives: “it's like a responsibility that we have as minorities to, like, not be so aggressive and be, like, accepting of people who don't understand us and want

to, like, learn more (...). I feel like it's a responsibility not just on the majority but the minority as well.”

Late in the conversation participant 12 asked, “Are there black counselors?”. Only participant 13 was able to answer: “I think that the university, or like as far as the athletic department, I think they might have added two, because I remember them, kind of like, making a big deal about it last June when everything was going on. Now there might be more (...) but I definitely think that is something that should be talked about and looked at.” She went on to say, “that was something that I struggled with and was kind of hesitant to get involved with, because that is something I think is important when, like, trying to find, like, the counselor or therapist. It’s like, sometimes you just want them to look like you.” Participant 12 agreed by adding, “yeah, representation matters, and I also feel like not just for black people but Asian, Asian-Americans, Europeans.”

Going beyond racial diversity, participant 13 mentioned resources that need to be established or advertised more, like “groups for like LGBTQ within the athletic department” because she knows of individuals who needed that support and “didn’t really feel like they could share experiences”. She adds, “that is a large group (...) that should be included when just talking about like resources. And I definitely think it needs to come from hearing people’s perspectives (...). This leads to the final discussion point that came out naturally in focus group 1, which was about diversity issues the participants had faced during their collegiate time.

Summary

One focus group had input on diversity, equity, and inclusion (DEI) around campus. Students appreciated the increased efforts and were aware of the resulting benefits, however, they are hoping for improvements. Specifics mentioned were expansions to different settings and

changing the structure of some DEI events. They suggested exposing students to different perspectives from outside of their common social circles, encouraging stepping out of one's comfort zone, making sure that DEI is addressed beyond just race, and wanting more diversity among employees' who represent resources around campus.

Positive Resources

With the primary focus of this report being on how to improve on-campus resources it was necessary to identify resources that are already viewed as positive. Therefore, participants were asked to share resources they felt were already good. Unfortunately, this section is particularly short, however, this is due to the lack of clear indication of what resources students thought are good, as well as a lack of identification of why those resources are good. On the other hand, several instances existed in which this was portrayed within explicit identification. This, unfortunately, would require too much interpretation on the researchers end which was not the intention of this report.

One of the positive resources mentioned by participant 11 is in relation to a student-athlete resource: "The (student athlete support) center. It's just, like, free space where you can just do your work get, help, and see other people." He emphasized the ability to socialize with individuals from other teams as it is difficult to do this outside of this resource. Similarly, participant 32 discussed a benefit that her student-athletes have used, which are "sports psychologists on campus and, that they said those, that's been a really helpful resource. And that's something I wished I had as an athlete". Although several participants mentioned some negative aspects of seeking mental health resources available to all students, participant 31 added positives. He mentioned that "psych resources on campus (...) do a wonderful job of psych triage (...) you can walk in there if you are symptomatic", adding that "they do therapeutic

triage, which is fantastic.” Participant 41 highlighted the difficulty of this particular resource earlier but does feel like “the actual athletic trainers is a good service, and if you know how to actually access it. I mean they do a great job to make you feel comfortable, everything that you're used to solved (solving all issues).”

Summary

Some positive resources identified were a specific, more relaxed, location where athletes could be around each other, emergency services of some mental health resources, and the athletic trainers in general.

General Suggestions for Improvement

The following section deals with suggestions that participants had for improvements around campus. Suggestions relevant to the above topics have been addressed there. This section will also entail suggestions by the primary investigator, which will be distinct from participants, and will conclude with words of advice from participants.

Increased Face-to-Face Interactions with Resources

One of the first suggestions of improvements that came up within focus group 1 was the need for face-to-face interactions with individuals who provide resources, as compared to general emails or other personnel relaying information. This need went beyond the struggles of the pandemic. It was exemplified by participant 12's response to how to make information about resources more genuine. She said, “Well, face-to-face is always more genuine.” Later participant 11 had the suggestion that having one's coach relay resource information would be more beneficial and informative, rather than receiving the information through email. The researcher suggested an alternative which would involve regular visits from individuals working for

different resources to explain their roles and the benefit of the resource, which participant 11 agreed would be beneficial as well.

This was also addressed in focus group 2, by participant 21. She touched on the lack of being taught self-help methods which would be extremely important to learn about while adding the importance of being able to “put a face to, like, something.” In other words, that it would be beneficial to get to know employees working for different resources. Participant 22 built on this through her own experience in her sorority with annual speakers from various resources. She highlighted the benefit of those speakers supplying their contact information to everyone at the event. She added another specific example from her experience called ‘Greeks take the lead’: “every Greek life member would have to go to that where, it was like an hour to two hours and just about different stuff. Kind of along those lines like nutrition, mental health, sexual assault, and those kind of things”. The researcher’s suggestion is that this could take place in team practices, resident hall meetings, lab meetings, etc. It would allow individuals to become more familiar and, more importantly, comfortable with resources and their personnel, further encouraging resource seeking and decreasing stigma.

Improving Existing Resources/Procedures

Similar talks mentioned by participant 22 are also being held with athletic teams, as indicated by participant 23. Although, he voiced his frustration with presentations related to sexual assault, relationship violence, and similar topics, indicating that those presentations should not be catered to the audience. His suggestion is to “drop the hammer on some of these awful things that we, we talk about, but we dance around it”, and clearly being told what the inappropriate behavior is. Expanding on this, it is beneficial to cater the conversation to the audience in some situations but in others it might be better to not do so, with the goal of making

the audience uncomfortable. This, again, hints at the comfort zone, discussed multiple times, highlighted in a subsequent quote by participant 23: “these topics are not supposed to be comfortable, and I think the same could be said with mental health and in other topics that we need to talk about”. He also mentions that it could be more beneficial for male teams to have these meetings with female teams, as it would encourage the men to stay more on task. The women in the group seemed to agree but also felt like it would make their own meetings less productive.

In connection to this, participant 23 added that it should be required for students to meet with their academic advisors regularly. That way the advisors can tell them, “This is (...) what we're paid to do, we're here to help you”. He followed this up with, “I think having to go into that meeting is very beneficial and I think that's one of the only ways that you can start realizing people are here to help.” Similarly, he highlighted a conversation he had with a nutritionist and librarian. He was surprised that both wanted to be contacted to help students out and that they enjoy this work, which is another aspect that should be made clear to students. The significance of the academic advisor was also addressed by participant 22, discussing the familiarity aspect once more while also identifying the importance of seeing one’s academic advisor at least once a year: “I think that that's a good resource to help you because they have resources for your academics and outside of school”.

Although not specifically discussed as a suggestion for improvement, participant 33 felt like many students do not seek out resources because of the lack of a sense of community. She mentions that she is, and most other students are, aware of the resources on campus. She felt, however, that “community, I think has, is less solid now that technology is more a part of our lives, and we don't have to always be out and doing things and interacting”. This again relates to

being comfortable with the available resources to make seeking them out easier. Additionally, more specific to her comment, overall improving a sense of community may aid in more conversations with individuals in similar situations to oneself. Through these conversations it would be possible to not only aid each other directly but one could direct others towards resources that have helped oneself in the past. This relates well to a suggestion regarding incoming second year students. These students are likely struggling significantly with not being able to live on campus at all, due to the pandemic. Participant 21 felt strongly about offering this specific population a way to establish a community being that they were unable to do that themselves due to the pandemic.

A common suggestion that came up in focus group 2 was improved communication. This arose through participant 22 mentioning her, and many of her friends, being vaccinated which should have allowed in-person class attendance. Another broader issue with lack of communication was raised by participant 23 who would like “an open line of communication” with resources. He also mentioned that there have been resources “that I didn’t know that I had until this year”. After asking for an example, he mentioned the nutritionist and counselor where he initially thought he had to contact an athletic trainer before realizing that one can “just shoot them an email” to have a conversation. He concluded this by stating that “a lot of those things there isn’t clear information in procedures that you can go through to, to get access to those things.”

This is a reminder of the fact that resource use and asking for help starts with the identification of a resource and how to access it. If the access is difficult, it decreases the chances of a person using it. A further instance of this issue came from participant 31, “communication is always a challenge. You know I mean academic compliance is rarely talking to admissions

which is rarely talking to where you have to get your transcripts, you know.” He concludes with this resulting in “running to four different places to try to solve one issue”, although he considers this being common across large businesses, but that it is necessary to ensure well-being.

Summary

Some suggestions about how to improve resources around campus entailed more face-to-face interactions from resources while also being taught self-help strategies in general. Improved communication between resources and toward students is highly sought after, while a specific suggestion was to require more regular meetings with one’s academic advisor.

Ideas for New Resources

As a response to the question of how to improve resources on campus, participant 12 mentioned the idea of starting a campaign where students can write issues they are having anonymously on sticky notes and somehow make those available to others. Her thought is for others to see that they are not the only ones going through struggles, and maybe even that there are others out there who are dealing with the same or similar obstacles. She went on to say that her thoughts are not fully formed on this but, “that whole anonymous thing could maybe lead to something else that the student resource group has, like, later in the month or year.” Related, although not regarding resources, was participant 12’s suggestion for an activity write something down that “makes you uncomfortable or something about yourself that people don’t know and you, like, put in, like, a hat and, I guess like, you just read off of it.” Additionally, she mentioned that this could be anonymous, or someone could say that they were the one who wrote it. Her thought behind it was that it would bring people closer together by allowing participants to learn things about each other.

Another suggestion, from participant 13, to potentially increase general resource usage entails “advertising what it costs” to use specific resources outside of a university setting and that “you don’t realize how much of an advantage it is” to have these resources readily available. Participant 21 added to this thought by stating that it should be communicated more that people “really are here to help you and you should obviously, like, use, like, all the resources you have (...) once you graduate, like, you won’t have all these, like, free resources.” A further addition came from participant 23 who realized the difference in seeing a mental health professional while in college compared to being out of college. She mentioned that her sibling, not attending college, had a much more difficult time finding help while also having to pay for the service. She highlighted that it might help if students are made aware of the added difficulty of seeking resources once they graduate from college. The researcher added that it seemed like seeking out help/resources was a skill that had to be learned over time, which participants agreed with. Therefore, having a program in place to encourage help-seeking behavior could be beneficial. Students often also strive for autonomy, but do not realize that seeking help is part of being an autonomous individual. Participant 23 had an additional suggestion to help students understand that it is appropriate to seek help: “Just realizing that people are being paid to help you, you’re not, you know, taking someone’s time and being a burden on them by asking for help”. This was furthered by participant 22 reflecting on his generations’ hesitancy to “be a burden on someone” and that students might be more willing to seek help if they know “people’s backstories” and how they got into their current occupation, suggesting comfortableness aiding in help seeking.

This associates well with the earlier mentioned conversation of putting a name to a resource. This method of identifying people’s backgrounds, paths to, and reasons for working a particular job may increase the familiarity factor between students and resources, making it

easier to seek out those resources. Additionally, it connects with many students struggling with their career choices. Learning about different career opportunities through these resources would be another method to increase knowledge about various career opportunities. Another suggestion was the development of a mandatory one credit course, by participant 31, educating about different topics like “how you stay organized”, “how you manage your, your money”, where certain resources are, including academic and mental health resources, and how to seek help in general. The researcher noted that this is something that should be developed much deeper but could allow students to be introduced to specific life skills needed at their university. It could further allow for individuals from different resources to meet with the class and discuss their role. Finally, it could serve as a location for incoming students (freshmen or transfer) to establish connections with others who are experiencing similar stressors. An additional option would be to either have these classes with individuals in the same major or not, allowing for a diverse group of students. The idea of a course like this was supported by participant 33 who mentions that resident assistants, and resources around campus, host programs to help students. These programs are not well attended. So, she mentions “a mandatory one credit like wellness class,” because, “if we're given the option, to be quite honest, I don't think many of us are going to go to something like that.” She further makes the point that individuals attending programs hosted by the school are also usually the ones who seek out resources anyway.

To participant 31’s suggestion, participant 32 added a more specific example out of her experience called The Lift Project. Through weekly videos it addressed “different ways to just lift you up”. Amongst others, it included healthy eating and exercising habits. One part she felt strongly about was the idea of “Just checking in with somebody else, you know, a friend, a family (member). Just, ‘hey, this is how I've been feeling lately. How are you feeling?’” This

related back to comfortableness, addressed several times. Through this established comfort, it creates an environment that makes sharing struggles and asking for help normal. In response to the class mentioned by participant 31, another suggestion was, “a mandatory gap year between senior year (of high school) and freshman year (of college) and I think students, don't send them to the military, I think they should all have to work in the service industry for a year.” She mentions that individuals will earn money, be exposed to inappropriate behaviors by others which could build self-esteem and coping strategies, gain life experience, “and understand, like, how things work. How money works. Where it comes from. And then you go to college.” Touching on an increase in socialization, Participant 11 also added the need for a location that athletes can meet: “why don't we have like a (*sic*) athletic caf (dining hall) we could all, like, go to? Where you're gonna see other teams and interact with other teams and see, see their faces, at least.”

A suggestion, which could also be taken as advice, was that “helping students plan and learning to plan, their schedules would help a lot”, noting that one of his teammates “still wouldn't do any of his work and he'd be like, ‘oh, I missed a deadline.’” Although participant 41 did not struggle with this personally it is immensely significant that he identified the struggle of someone else while being able to identify how to overcome that struggle. He mentions that it would be beneficial to teach others how to plan out different aspects related to academics, including “to plan out to study before something's about to happen”, citing a benefit with the reoccurring struggle of finals week, “so you're not just cramming at the last minute.”

As a follow-up to her opinion that individuals are relying too much on an online community to help with one's issues, primarily mental health, participant 34 raised an important point: “I think that it (use of an online community) misses the next step of, like, ‘all right what's

the next actions step we can take to like sort of move out of this”’. One method around this might be the larger scale suggestion for improvement given in focus group 2. Participant 22 started it by finding a solution for the overwhelming amount of information that is sometimes given through different media. She says, “I guess just having (...) a website with all the resources, like, just listed and you could do, like, a ‘command F’ (search for terms within a website) and find, like, what you're kind of looking for”. Participant 23’s thought was, “instead of telling us where to end up tell us where to begin and then kind of use that as a way to guide us there.” He took the idea that participant 22 shared even further, suggesting a website that has different prompts/links that you can follow like, “you want to talk about mental health?”. Following these links then brings one to subsequent questions which prompt a ‘yes’ or ‘no’ response “just kind of guiding the mind and maybe, and asking questions that you haven't thought about to lead you in the direction that you need to go”

An overarching suggestion by the researcher is the importance of investing more into the mental health infrastructure (e.g., increase the number of counselors and psychologists, have a bigger location dedicated to mental health, etc.). Additionally, this may include a need for different marketing strategies to educate more students. One suggestion for this was mentioned above in terms of increased face-to-face interactions with individuals from varied resources. The limited availability for appointments was a topic addressed in almost all focus groups. Taking this thought further, as it relates to diversity, it is important to have a diverse group of mental health professionals, as some students may be uncomfortable working with individuals dissimilar to themselves. In addition, something that many schools are starting is having mental health professionals as part of athletics. Extending this to dormitories and academic departments might

be immensely beneficial as it would aid in normalizing meetings with mental health professionals as well as increase accessibility.

Summary

Several suggestions for new resources were revealed through the focus groups. Some specific ones included anonymous sharing of issues to normalize them and help others realize that they are not the only ones struggling. Another specific suggestion was an athlete only dining hall to allow for socialization between teams, although this may allude to how strongly some participants identify with the athlete identity while seeking a stronger sense of community within this identity. More vague ideas were the establishment of a mandatory one-credit course for incoming students to help with the transition as well as a website guiding individuals to a needed resource. The mandatory course may also entail other suggestions like teaching how to seek resources and how to plan one's day.

Advice for Future Students

As it can be seen throughout the focus group discussions, stepping out of ones' comfort zone is an important topic. In response to this, one piece of advice from participant 13, "based off of my own experiences, something I would recommend is just not being afraid to reach out for help, in terms of, like, all of the resources offered-- nutrition, athletic training, mental health." He goes on to talk about the importance of being vulnerable which he thinks is "one of the biggest obstacles in terms of stepping outside of your comfort zone and, you know, wanting others to understand your issues. Sometimes it just takes stepping out and being vulnerable first, and it encourages everybody else." He mentioned that this should be encouraged more within athletics, although it would be a universally valuable piece of advice.

Another piece of advice given by most participants in focus group 3 related to seeking out a mentor “whether it's a teammate, a friend, you know, maybe a professor can recommend somebody, one of your TAs that's older than you and talk to them about their experiences” (participant 32), in the early stages of college. This should be someone who recently experienced college and can advise on experiences during their time in college. Participant 34 adds to this by making it more specific to how athletes and kinesiology majors, including those that want to become coaches in the future could benefit from “a mentor, like, a coach mentor or an older athlete mentor. I mean that's, that's huge.” This sparked an experience that participant 32 had during her undergraduate years where upperclassmen got assigned to freshmen to help with the transition into college. “They were just a resource that you could email or text throughout the summer if you had questions. If you were nervous about anything.” This not only helps incoming students with getting acclimated to college, but it also helps older students by being responsible for someone and therefore learning how to mentor others.

Summary

Although the amount of advice for other students was not extensive it still included valuable information. It included being vulnerable and overall stepping outside of one’s comfort zone. It also included seeking out a mentor to aid in a positive experience of college.

Discussion

Quantitative Results

An examination of mental health and several personal characteristics was undertaken for hypothesis 1. This relationship between depression, anxiety, and stress with race, SES, and PA was only partially supported by the findings. Hypothesis 2, the mediating relationship of PA with race and parental education on depression, anxiety, and stress, was not supported by the data,

although some significant findings were revealed. In addition, this study also evaluated free-responses and focus groups in relation to obstacles faced, on-campus resources, and the benefit of PA. Several interesting, informative, and beneficial responses came from these responses, which may aid in further improvement of the college student experience and well-being.

Race and Mental Health Indicators

No statistically significant findings were found across depression, anxiety, or stress in relation to minority and non-minority participants. Hypothesis 1 stated that there would be significant differences across all mental health variables, resulting in this hypothesis not being supported. These results are not consistent with previous findings. For example, a systematic review by DuPont-Reyes and Villatoro (2019) found that minority groups within a school system have overall worse mental health than their non-minority counterparts. Specific factors contributing to negative mental health, primarily post-traumatic stress and depression, included social rejection, threats/attacks, and stereotyping (Chin et al., 2020). The current study did not distinguish between different causes of depression, stress, and anxiety, but rather the composite scores from these variables. Related to this, a study by Fuller-Rowell and colleagues (2021), on African Americans attending a predominantly White institution revealed the effects of exposure to racism. The researchers revealed that those identifying with negative stereotypes were more negatively affected by the experience of racism. Although the context for Fuller-Rowell and colleagues (2021) study might have been different and therefore not easily comparable, the findings offer very interesting insights about race and mental health.

The dynamics of the current study are significantly different from those of previous research, which may explain the difference in findings. Data collection of the current study occurred with college students who were exposed to hard restrictions due to the COVID-19

pandemic. Participants lacked the ability to gather socially in any capacity, including attending classes. With most participants likely having stayed with their caregivers before and during data collection, minorities may not have been exposed to discrimination and other factors that would impact their mental health negatively. This means that minorities, rather than attending a predominantly White institution, would have been around individuals more similar to themselves. This is supported by Hoyt and colleagues (2021) study on stress and anxiety in college students compared across personal variables, during the COVID-19 pandemic. These variables included race/ethnicity and household income (SES). Their findings concluded that gender identity and sexual orientation related to mental well-being, however, race/ethnicity and SES did not. The authors reasoned that the effect of gender identity and sexual orientation on mental health may stem from less resources and campus support as well as sustained exposure to unsupportive household members. Similar results were found in a systematic review by Gibson and colleagues (2021). Here, the authors also found that nonbinary and transgender participants experienced worse mental health, although racial and ethnic minorities, in most reported studies, also had worse mental health compared to non-minorities. This highlights those certain situations may give rise to more race related issues than others and underscores the importance of evaluating the experiences of the LGBTQ+ community.

Parental Education and Mental Health Indicators

In relation to parental education, only anxiety levels were found to be statistically significantly higher in caregivers with a high school education or below, compared to those with a master's degree or above. These two variables represent the lowest and highest levels of education in the study. It is surprising that there was no significant difference across the other mental health variables, although these results support previous literature. For example,

Grzywacz and colleagues (2004) found that individuals with more education also had better physical and mental health, while improving in health over the course of the study compared to individuals with less education. Additionally, individuals with less education were exposed to more severe stressors. The authors argue that these stressors, as part of daily stress, further the decrease in health amongst less educated participants. Data also points to depression being a factor of level of education and income, on top of immigration and marital status (Akhtar-Danesh & Landen, 2007). Additional support for this comes from Bjelland and colleagues (2008) who identified that level of education buffers against anxiety and depression, meaning that the higher one's level of education the less likely one is to experience symptoms of anxiety and depression. However, it was suggested that this buffering effect decreases with age.

The results partially support findings from previous research (Akhtar-Danesh & Landen, 2007; Bjelland et al., 2008; Grzywacz et al., 2004), although one would expect to see the largest differences in mental health to occur between the two most extreme levels of education. The partial support for the proposed hypothesis could be explained in terms of strong pandemic restrictions. Restrictions likely resulted in less travel and less time spent at the university (more time spent at one's permanent address) with more exposure to family living conditions and less social comparison. Staying home, would have meant more social support, even though for some it could have negatively affected learning because of resource limitations. Limited interactions between social groups could have led to reduced social comparisons (e.g., living conditions and money to spend) which may often be very stressful and at times depressing. Clearly, more research is needed on the relationship among social interactions, SES, depression, anxiety, and stress.

Gender and Mental Health Indicators

When comparing depression, anxiety, and stress levels between males and females, results indicated that males had significantly higher levels of depression. There was no statistical difference across anxiety or stress. This does not support the expectation of females having significantly higher levels across all mental health variables. This is contrary to the findings by Akhtar-Danesh and Landen (2007) who reported that female college students had significantly higher levels of stress and anxiety compared to males. In a longitudinal sample of Chinese college students, anxiety levels, but not depression nor stress, were significantly higher in females compared to males (Gao, Ping, Liu, 2020). However, both genders seemed to suffer from mild anxiety, with the mean score of females being significantly higher. Additionally, males seemed to suffer from more severe levels of depression, based on cutoff points of the scale used, which does agree with the current study's findings. In a US sample, men and women had similar levels of depression although stress levels were significantly higher in females than males, although there was a positive association between depression and school stress (Pedersen, 2013). Interestingly, the author also analyzed binge drinking as a coping mechanism, which is detrimental in nature. For men, binge drinking was positively associated with class level and depression as well as indirectly with school stress. On the other hand, binge drinking in women was negatively associated with depression and school stress. Therefore, it may seem that depression and school stress are more significant in men due to their maladaptive coping mechanism. Clear differences in depression and anxiety were also found by Blackdeer and colleagues (2021), showing that females had significantly higher levels on both variables compared to males, in a college population.

Overall, gender differences in mental health exist, with the literature primarily indicating that females have worse levels of mental health, although when looking especially at depression the results are mixed. Unfortunately, these differences are not always clear in relation to specific mental health indicators, which suggests that this topic warrants further investigation. Like the previous variables discussed, gender differences are likely influenced by the pandemic restrictions. Considering these restrictions, it should be expected that gender differences across mental health indicators are less prevalent due to a lack of social interactions. In contrast, more exposure to the family environment, due to restrictions, could also increase gender differences because of previously established gender roles in the household.

Physical Activity Categories and Mental Health Indicators

Results showed that those involved in personal/unstructured PA, and NCAA athletes had lower levels of depression and anxiety compared to intramural sport participants. NCAA athletes also had lower levels of stress compared to non-physically active individuals and individuals participating in PA classes. Surprisingly, there were limited significant differences between none physically active participants and other PA categories. This partially supports previous established research as well as hypothesis 1. For example, in a collegiate sample of NCAA division 1 baseball players and non-athletes, the athletes had significantly lower amounts of depressive symptoms. Almost a third of the non-athletes reported possible depression while only a sixth of the athlete population did (Proctor & Boan-Lenzo, 2010). Similarly, a decrease in general PA, due to covid, resulted in increased levels of depression, anxiety, and stress, with worse levels being among individuals aged 18 to 45 (Stanton et al., 2020). Recreational sport activities, rated above watching varsity sports teams and clubs and organizations, was found to be a significant factor related to college satisfaction and success across all students (NIRSA,

2004), with life satisfaction being negatively related to depression, anxiety, and stress (Mahmoud, Staten, Hall, & Lennie, 2012). For heavy users of recreational sports, only meeting new people, prospects for job/graduate school, and academic components were more important than recreational sports activities. The number one benefit of recreational sports participation, as cited by students, was that it improves overall emotional well-being, followed by reducing stress and helping with workload management, and improved overall happiness.

No previous research was found to compare PA class participation with athletics, making it difficult to identify reasoning behind the differences in mental health levels found in the current study. Although, it could be expected that those participating in PA class would have worse mental health due to the pandemic restrictions. They were unable to interact with others or leave their residence. Additionally, all PA classes during the time of data collection were conducted virtually, with most of them being asynchronous. This likely contributes to an obligation to engage in PA even though it may not be preferred at the time. Overall, the significant differences between types of PA and intramural sports may also be explained by pandemic restrictions at that time. Many NCAA sports were still competing, or at least practicing, allowing for the mental and social benefits of this category, even though participants in focus group 2 were worried about participating with teammates who did not follow the pandemic guidelines. Personal/unstructured PA participants, intramural, and club sport participants would likely have suffered from a lack of space to conduct PA. However, personal/unstructured participants may be accustomed to PA on their own time and are able to structure it even without facilities, allowing them to still benefit from it while having less concern about the social interaction benefit attached to most other PA categories. Intramural and club participants would not be able to do so, especially during the cold climate when data was

collected. They are likely to have had more depressive feelings due to not being able to participate in PA as well as being unable to receive other expected benefits of participation in PA like social interactions.

When looking at the results of the College Experience Survey question regarding ways in which PA has helped one cope, the top two answers (“time away from stress or allows me to relax”, “allowing me to interact with my friends”) are not fulfilled for club, intramural, or PA class participants. This is the case because participants were still in their home location where likely most of the stress is experienced and were unable to interact with their friends in a “normal” manner. Surprisingly, the most common response (“time away from stress or allows me to relax”) may not be fulfilled for private/unstructured participants due to the lack of facilities, yet they still showed significantly lower levels on depression and anxiety. Finally, there is likely a lack of familiarity with the structure of athletics and PA classes and a lesser amount of available PA in total. This may contribute to the lack of statistically significant differences between physically active and non-physically active students on depression, anxiety, and stress. Overall, however, research has shown that PA decreased significantly more across the most active individuals (Wilke et al., 2021), including the most active college students (Barkley et al., 2020). Adding this to the above-mentioned knowledge of college athletes continued level of PA may explain why many of the other PA categories and mental health levels were not significantly different from non-physically active participants. A change in PA, compared to no change for individuals who already do not participate in PA, could further increase negative mental health.

Finally, the focus group results section, discussing PA in relation to COVID-19, highlights some interesting aspects relating to these quantitative findings. For example, one

participant mentioned that it was much more difficult to engage in PA, while another mentioned the worry of contracting COVID-19 connected to their sport, even though they were still able to participate without too many added obstacles. This may highlight a worse level of mental health across the entire study population but also may partially explain unexpected, non-significant findings of the quantitative analysis. Overall, however, identification of how differential participation in PA affects mental health as well as attitudes toward PA, identified through qualitative inquiry, greatly adds to the literature. It may aid in explaining and recognizing varied benefits of different types of PA.

Physical Activity Mediation Model and Mental Health

Hypothesis 2 about physical activity mediating the relationship between race and parental education with depression, anxiety, and stress, as related to the adapted Diathesis-Stress Model, was not supported. Interesting results still emerged although the full model had a low model data fit. Specifically, direct but small effects were found between parental education and all mental health variables, as well as between PA type and anxiety and stress, listed under table 7. All of these were negative and small, indicating that an increase in parental education causes a slight decrease in levels of depression, anxiety, and stress, while a move from no PA to NCAA sport (1. no PA; 2. PA class 3. personal/unstructured PA; 4. Intramural PA; 5. Club sports; 6. NCAA sports) participation causes a slight decrease in anxiety and stress levels. No significant paths were identified with race. It is also noteworthy that there were no significant paths from race or parental education to PA. This somewhat supports this study's prediction of PA aiding in mental health regardless of predetermined characteristics, like race or parental education.

This not only highlights a relationship sparingly evaluated (mediation of PA) but also supports some previously established research with similar variables. It also involves the use of a

less common approach to the diathesis-stress model which entails exploring the role of PA. In terms of PA, the significant direct paths are supported by Proctor and Boan-Lenzo's (2010) results of NCAA athletes having better mental health levels compared to non-athletes. Additionally, a study analyzing the relationship of race and health behaviors (including PA) has indicated that level of PA is negatively related to depression, although the results also indicated that white individuals are more likely to be depressed compared to minorities (Lim, Davis, Chen, 2021). In terms of parental education, these results are supported by more educated individuals having better physical and mental health (Grzywacz et al., 2004), education and income being tied to mental health (Akhtar-Danesh & Landen, 2007), and education buffering against anxiety and depression (Bjelland et al., 2008). Other studies identified the negative relationship of PA and depression regardless of education level or income (Marques et al., 2020). Similarly, PA was found to have a significant negative relationship with depression and anxiety, although once SES, age, and gender were added to the analysis this significance disappeared (Allison et al., 2005). Furthermore, higher parental education level was negatively associated with stress and hassle and positively associated with level of PA (Nguyen-Michel, Unger, Hamilton, Spruijt-Metz, 2006). From this it is plausible to deduce the combined effect of parental education and PA on stress.

Even though findings from the current research may seem to contradict previous findings on some variables, the research shows a lot of promise on the relationships between PA and mental health. Poor model fit for the mediational model was disappointing. Reasons for the low strength, as already addressed earlier, are likely related to the pandemic and its related life adjustments, including a lack of social interactions and access to PA facilities. Clearly, more research needs to look at the mediating and moderating effect of PA in relation to personal

characteristics and mental health. Additionally, the effect of all variables (race, parental education or SES, PA), independently and in various combinations, needs to be analyzed further. Lastly, a closer look should be given to the positive effects that the diathesis-stress model might be able to explain by evaluating other factors (e.g., resilience, year of study, etc.). With that, objective evaluations of intensity of PA (e.g., VO2max, pedometer, heart rate) in addition to type of PA may be beneficial. The use of the diathesis-stress model gives another potentially useful avenue to explore PA in relation to mental health. The inclusion of PA also allows for a more positive approach to mental health evaluation compared to the general use of the diathesis-stress model.

Differences between Study 1 and Study 2

As would be expected, based on the impact of the pandemic on the lives of all college students, participants in general from study 1 had significantly lower levels of depression, anxiety, and stress compared to participants from study 2. What was surprising was only anxiety being significantly higher in White study 2 participants compared to non-White study 1 participants. No other mental health indicator was significantly different across the two studies.

The general difference in mental health across the two studies is in support of most research highlighting the pandemic as an added stressor (Salari et al., 2020). A systematic review found increased mental health struggles across several populations, including the general population due to the COVID-19 pandemic (Vindegard & Benros, 2020). College students in attendance during the pandemic indicated increased levels of stress and anxiety, while less than half of the sample indicated the ability to adequately cope with the pandemic (Wang et al., 2020). Additionally, a qualitative inquiry by Son and colleagues (2020) revealed increased stress and anxiety resulting from COVID-19, with several reasons given for this increase.

Results on race differences are noteworthy. There are no race differences within samples in each study, but between the samples from study 1 and 2. What is surprising is anxiety being the only variable which is significantly lower in participants who identified as non-Whites in study 1 compared to their white counterparts in study 2. It is not clear what could have accounted for this difference. One explanation may be that ethnic minorities already had high anxiety levels before the COVID-19 pandemic restrictions were put in place. Although not significantly different from non-minorities during the same timeframe, students who identified as White had similar levels of depression and stress to non-minorities experiencing the COVID-19 pandemic restrictions. Another cause may be that study 2, unlike study 1, included data from a separate region (small university) which could have influenced differences. One aspect to highlight again is that there was no significant difference with depression or stress.

Qualitative Assessment of College Student Experiences (College Experience Survey)

Participants answered a multitude of questions ranging from obstacles faced in college, to suggestions for overcoming those, and how to improve on-campus resources. As expected, the most common discussion point across the top five codes of each question was academically related, which clearly indicates the focus on the academic aspect of college. This was the case for the questions asking what one's most common obstacles are as a college student, and suggestions for campus resources to aid in one's specific obstacle. Interestingly but also somewhat expected was the recurrence of the "social" code. Social interaction was mentioned in response to obstacles faced and how obstacles were overcome. Having a larger focus on improving interactions between students, as well as between students and faculty, could greatly improve well-being across campuses. One may also consider that balancing one's life, which followed academics and social as the most common obstacle, is highly related to the two most stated

obstacles. This may hint at the importance of helping students, especially freshman, figure out how to adequately schedule and plan out their time as it may significantly contribute to freeing up time to socialize, take care of academic obligations, and support one's well-being.

The presence of academic and social related codes does compare to previous literature. For example, in college students, academic (perceived academic stress and academic engagement) and social aspects (loneliness) were found to significantly relate to depression (Newcomb-Anjo et al., 2017). Similar findings showed that over half of all college students in a sample identified academics as being traumatic or very difficult (American College Health Association, 2018). Finances are listed as the second highest factor with 36.7%. Interestingly, intimate relationships and other social relationships were separated in the study but still covered 32.2% and 30.9% of the responses, respectively. In relation to the pandemic, students are unable to adequately engage with others decreasing their overall social interactions (Lederer et al., 2021). Findings from another study partially supports the current findings, indicating that academics are most related to depression, anxiety, and stress. However, social interaction (listed as friends) is preceded by success, life after graduation, finances, and sleep as sources of concern (Beiter et al., 2015).

Striking is that most participants who overcame their most stressful obstacle did so by working through it by themselves. This is similar to what has been reported by the American College Health Association (2018). Here, of the individuals who were diagnosed or treated by a professional, the majority sought treatment for anxiety (22.3%), depression (18.4%) or both, anxiety and depression, (15%). On the other hand, almost 70% indicated not seeking any professional help (American College Health Association, 2018). In a different study, a number of students indicated a preference for self-management of their issues (Czyz et al., 2013) which

again agrees with the current findings. From the present study, this may be seen as a positive sign as young adults learn to navigate obstacles and find ways to overcome those on their own. On the other hand, this may be an indication that those who did not overcome their most stressful obstacle were not able to do so because support was needed but may not have been sought out. Taking this thought further, the needed support may be non-existent, students are not aware of their existents, or students do not feel comfortable with seeking out those resources. Of those in the current study who did not overcome their obstacle the majority indicated that mental health resources would have helped. However, the most common barriers to seeking on-campus resources are personal. No literature was found that addresses personal barriers separate from stigma, however, stigma was found to be a significant predictor of mental illness disclosure (Corrigan, et al., 2016) and a barrier for seeking professional help (Czyz et al., 2013). Here, normalizing and teaching students how to seek help could encourage overcoming the personal hesitancy of seeking help.

Focus Groups Assessment

The two focus groups each, at a large and a small university, revealed several interesting topics which could inform improvements for college students' well-being. Of course, it is hoped that the pandemic, and restrictions associated with it, will not last much longer. There seem to be improvements, as of this writing in 2022, although the future impact of COVID-19 is still unknown. This still makes evaluating the discussion related to the pandemic important. However, even without a pandemic, this information may benefit future improvements.

Related to the literature, several students indicated negative aspects in response to the pandemic. They had to deal with negative consequences of the pandemic, like less social interactions, increased discrimination, and a volatile homelife, which negatively affected their

mental health (Lederer, 2021). Students also showed increased levels in depression at the onset and duration of the pandemic, which was significantly higher than the general population (Xi, 2020). Connected to the discussion on PA, studies found a drastic decrease of such during the pandemic (Maugeri, et al., 2020; Stockwell et al., 2021; Wilke et al., 2021), as well as increased obstacles and concerns with academics (Clabaugh, et al., 2021). Benefits as related to the pandemic was the last topic here. Several included increased flexibility as well as an ability to focus more on athletics or academics. No literature to date was found addressing this. Although all of this was in response to the pandemic, these findings may not only be beneficial to acknowledge at this time but could aid post-pandemic life.

The amount of input received by all the students about this topic clearly shows how significant the adjustments to the pandemic affected everyone. Although the hope is that these situations will not occur again any time soon, it is still imperative to identify the significance of some of the issues related to it. It is important to appreciate these issues, as well as benefits, as they highlight the importance of certain aspects (e.g., resources, social interaction, etc.) that would have otherwise not been brought to light as clearly. From this we may take advice to apply to other areas, not related to the pandemic. This is where the current study greatly adds to the literature, by garnering insight into students' own manifestation of several obstacles, including the COVID-19 pandemic.

The second big topic of the focus groups revolved around mental health. Related resources and stigma were the big talking points, illuminating very interesting thoughts. Primarily, increasing relationships with these and other resources, through face-to-face interactions, seems most beneficial. This may also aid in increased social interactions, which are highly sought after as illuminated in the qualitative survey results. An interview-based study had

similar results. Students indicated issues with long waiting times for mental health resources, and also mentioned barriers, including unawareness of needed resources (Giamos, 2017; Gibbons et al., 2019).

It is evident that students struggle with mental health. These struggles are exacerbated by troubles with resources and stigma, although appropriate communication between entities could counteract that. An aspect that stuck out was the indication that a required online course helped one of the participants with some of the mental health stigma. A course for college students focused on adapting to college and dealing with other related aspects was mentioned by participants multiple times. Taking other components of these discussions into account, it seems most productive to have such a course in person, during the first semester at a university, while being mandatory.

Similarly, diversity related meetings were appreciated but suggested to be improved upon through increased interactions with other athletics teams. This could also be translated to academics, where more discussions across varying groups (e.g., majors/departments, colleges, students, faculty, and staff) are likely to aid in the progress that many universities have made. It is also important to consider the various suggestions for improvements and ideas for new resources. This is reflected in a culmination of research-oriented essays by experts of diversity, equity, and inclusion (Ballard et al., 2020). Authors highlighted the improvements of college campuses through diversity-oriented efforts; however, they also emphasized that more needs to be done (e.g., further increasing diversity, retention of diverse faculty and staff, increased opportunities for the diverse population). Specifically in connection to participants in the current study being unaware of the level of diversity amongst on-campus resources, a qualitative inquiry by Gwayi-Chore and colleagues (2021) revealed that minorities are uncomfortable and have a

need to fit in to succeed. One of the suggestions to combat this was the diversification of faculty, staff, and students as well as to add more support for minorities. The goal behind this is to feel represented and heard, which seemed to be an issue with participants in the current study.

Diversity is still a clear issue on college campuses; however, many schools are contributing significant resources to this topic. Students in the current study identified several aspects that could contribute to further improving the efforts by universities. These include further discussions and diversification of staff, particularly in on-campus resources used by students. They also include more resources for diverse populations, with the LGBTQ community mentioned explicitly.

Finally, many students could gain from the advice given throughout the focus groups as well as within the qualitative responses of the questionnaire. Some suggestions included stepping out of one's comfort zone and utilizing a mentor. Obviously, many suggestions related to on-campus resources require increased amounts of work, planning, and/or monetary investments. It would be unrealistic to expect changes like these to happen overnight. Rather, the hope is that some of these suggestions can be used as they are or adapted to fit the current infrastructure of universities. Although, to overcome many of these obstacles it will be necessary to make bigger scale changes. Additionally, many of these suggestions are initial ideas that could lead to more fruitful and efficient improvements, if taken seriously. It is important to acknowledge that many of the issues plaguing resources are not easy fixes. It is also important to be aware that although there has been extensive criticism about certain resources, those resources are not necessarily at fault (e.g., increased waiting times at mental health resources due to lack of space or lack of mental health professionals). Large scale changes as well as monetary investments might be necessary for improvement. Although small changes might include training resident assistants,

and other individuals who regularly see students, how to deal with mental health crises and how to help students find and approach the help they need.

Quantitative versus Qualitative Results

In terms of the different parts of this research (i.e., quantitative, qualitative questionnaire, focus groups), it is important to point out converging/diverging parts. One of the most significant findings was that NCAA athletes had better mental health levels compared to other PA categories. This could be attributed to institutional and peer support systems and programs available to NCAA athletics rather than the mere benefits of level of activity for this group. Especially athletes at the large university have more resources in addition to the PA benefits that others were not able to gain due to pandemic restrictions. Athletes enter college as freshmen with a social support network already in place. They have teammates who are in contact with them before the semester even starts. They are also likely to have multiple mentors (e.g., coaches and upperclassmen athletes), as was suggested in one of the focus groups as a need for incoming students. Additionally, NCAA athletes have academic resources which they may be required to use, or at the least be suggested by their coaches. Finally, although having more obligations than non-athletes, they also have more structure which may aid in the transition from a highly structured high school environment. This structure involves classes as well as practice, meetings, seeing athletic trainers, attending study hall or meeting with tutors, and participating in and travelling to competitions. Incorporating the qualitative findings, specifically how obstacles are overcome, one could see that athletes have a buffer for all three of the most common obstacles reported (i.e., academics, social, time management).

Some contradictions are between the non-significant differences on mental health across races and the qualitative responses. While all focus groups and a variety of responses from the

qualitative survey indicated issues with seeking professional help, it seemed like minorities had an added obstacle. Particularly focus group 1 had a significant issue with not feeling represented within resources. Even though one participant eventually indicated that there is some representation in the counseling center it still sounded like there was some disdain due to the exaggerated way that this was publicized. So, on top of increasing representation for minority students', universities should also be conscious of how they publicize this change. Altogether, based on the added obstacle to seeking mental health it would be expected that minorities have significantly worse levels of mental health compared to non-minorities, which was not found in the current studies.

Implications

Although no significant differences across race in relation to mental health variables was unexpected, the significance of comparisons between study 1 and study 2 was. Similarly, differences between parental education were expected as were those relating to PA. These results indicate the effect that low parental education, and likely low socioeconomic status, can have on mental health as well as the benefit of participation in various forms of PA. Further analysis would be important to evaluate how those PA and mental health differences might have changed with students becoming accustomed to the pandemic restrictions or how those would show outside of a pandemic. With that, students renewed ability to use PA facilities should be considered. Practical implications point toward an increased benefit through these changes.

Additional implications include an increased need for mental health resources due to the pandemic related increases in mental health issues students are facing. Social interactions, which was one of the most sought-after aspects by students, should be further encouraged through official and unofficial resources around campus. This may be coupled with academic resources

as well as resources that enhance students' ability to manage multiple obligations, which was also very important to participants. Improved availability, accessibility, and education about these resources is needed. Specific to social interactions, athletes in the focus group indicated the need for a social space for athletes, while non-athletes at the large university put importance on cost free PA opportunities. Improving on diversity related education across campus could further contribute to positive social interactions.

Many students indicated that they were hesitant to seeking help based on personal barriers. This may be addressed through educational programs across campus, potentially attached to guest speakers during courses or mandatory residence hall meetings, to increase face-to-face interactions with individuals representing different resources. This approach would allow more awareness for most of the incoming students in the hope that this education will sustain throughout their academic career. A further suggestion, coming from the focus groups, was a mandatory course for incoming students, addressing aspects of the college life, information related to on-campus resources, and other beneficial components. Finally, gathering information from a diverse sample of students (e.g., year in school, major, gender, race, sexual orientation, etc.) specifically about how to make resources and the college experience more positive would be extremely beneficial.

Limitations

Limitations to consider are in relation to several of the variables evaluated, with the largest factor being the current pandemic restrictions. When looking at PA variables, there are factors which could affect PA participation, as well as its relationship with coping. One factor, especially when considering the importance of social interactions as revealed through the College Experience Survey responses, is that social interactions could be the primary influencer

on the mental health benefits of PA participation. The only categories that do not involve social interaction are unstructured/private PA and those not participating in PA. Another factor was students' inability to use campus facilities due to pandemic restrictions. They also include a likely inability to participate in PA outdoors since both schools represented in the study are in the northern parts of the United States, near large lakes, attributing to harsh winters. At one point, all recreational facilities at both universities were closed and once opened had limited capacity. This gives very few options for locations to engage in PA. Furthermore, one can anticipate that available options (e.g., one's own apartment, outside-dealing with weather) will not allow for the same coping effect as more typical and comfortable ones. Although inclusion of a large variety of physical activities to select from in the questionnaire, the occurrence of the pandemic did not allow for the participation in most of these, which may contribute to the lack of mental health differentiation between activities.

As mentioned in the discussion, racial differences may have had a lesser impact on mental health due to social restrictions. This could have been similar for parental education variables. Additionally, the small number of racial minorities in the study did not allow for adequate differentiation between minority groups. This could have also contributed to the lack of differences in mental health variables between races, although this low number may relate to minorities avoiding professional help (Carter & Forsyth, 2010). A limitation related to this low number of minorities could stem from the sampling technique used. Having minority student organizations forwarding the study invitation to members would likely have resulted in a more diverse participant pool. Additionally, the use of snowball sampling does not allow for an accurate representation of the student population as a whole.

There are several potential factors that could affect depression, anxiety, and stress, which were not examined in this study. These could have confounded the findings of this study. An example are adverse childhood experiences (ACEs: Center for Disease Control and Prevention, 2021; Merrick et al., 2018). ACEs entail multiple factors associated with negative health outcomes in adulthood, like alcohol consumption (Laudermilk et al., 2018), sleep disorders (Kajeeepeta, et al., 2015), and obesity (Wiss & Brewerton, 2020), with more ACEs increasing this risk. It seems limited access to health care and other resources, common in communities with lower SES, likely contributes to more ACEs (Nelson, Smith, Sethna, & Logan, 2019). Future studies may control for multiple factors or may include, or substitute, potential confounders within the adapted diathesis-stress model.

All focus groups had less participants than previously expected, due to the low number of self-selected participants and lack of responses of those that did self-select. Additionally, having one participant be a coach (graduate student) and another be their athlete enhanced complications. This resulted in splitting up two groups at one university. Unfortunately, one of the student athletes was unable to attend their focus group, leaving one focus group with a single participant. Another focus group was comprised of all minorities from one university to allow for more comfortableness when discussing certain topics, leaving the other groups with all white individuals. Having one group with only minorities while the others without may have been a limitation, although it could also be a benefit as it allowed for identification of specific issues based on racial background.

Conclusion

Many results of this study align with the literature, while others do not. With this study, it is important to realize the timeframe of the data collection. This was done during a serious, world

impacting pandemic, which very few have ever experienced. It is therefore imperative to acknowledge that participant responses and feelings are similarly less predictable. However, some aspects do point to the importance of PA on mental health. This was most evident when looking at NCAA athletics, which still held practices and competitions, although uncommon circumstances likely still impacted those results and proceedings. Clearly, a further investigation of the effects of PA on college student mental health is needed, as well as the impact that SES and race add. Additionally, evaluating further potential factors that could influence student mental health through the diathesis-stress model is necessary.

An important part of the current study was to have the voices of participants be heard. Specifically, qualitative questionnaire responses and feedback from focus groups add nuance to the findings and should be taken seriously. These can serve as important guides for on-campus resource improvement and well-being support for college students, although further investigation of these factors is necessary. This study gave students a platform to raise issues that they are faced with which otherwise may not be brought to the forefront, showing that this research format should be utilized more often. This format, in conjunction with the pandemic, revealed several important points that should be considered when trying to improve on-campus resources. These improvements would likely be beneficial during and outside of the current pandemic.

The studies aim was to examine the relationship of mental health levels based on race, parental education level, and PA. Additionally, the research sought to identify the mediating effect of PA between race and SES on mental health. Mixed methods are underutilized in this realm of research. Qualitative inquiry contributes uniquely by gaining personal knowledge from college students, adding opinions, obstacles, and advice. Connected responses further highlight the increasing need for mental health resource improvement. Having mandatory classes for

incoming students, freshmen as well as transfers, on top of increased outreach by resources should aid with help seeking behaviors. Although, resource improvements are difficult to undertake, long-term effects would likely be beneficial if improvements are done correctly.

Suggestions for Future Research

Further investigations on the topic of mental health for college students is warranted, as is qualitative inquiry related to it. This may be done through a more diverse sample, to allow for accurate analysis between minority groups, inclusion of additional universities, and/or expansion to additional domains (e.g., high schools, workplace, etc.). Future research is also necessary to evaluate the proposed diathesis-stress model with a larger and more diverse sample, as well as identify other models and variables which could better explain the relationship of PA with personal characteristics and mental health. For example, Xi and colleagues (2020) found that some students struggled coping with the pandemic. They found that one of the variables that aided in appropriate coping was resiliency, pointing to a variable that should be incorporated in future research. Further research is necessary to investigate specific mental health benefits between types of physical activities and how those may inform benefits for the broader student population. Finally, an increased amount of focus groups will allow for additional perspectives, while assembling focus groups based on demographic background should be considered.

In conclusion, this study adds to the literature on the impact that PA as well as parental education level can have on mental health. Although there was no significance in terms of race and mental health, comparisons between study 1 and study 2 add to the literature on the impact of the pandemic on mental health of college students. Furthermore, the sparse differences between study 1 minorities and study 2 non-minorities adds nuance that should be further explored. Original contributions to the literature include a better understanding of the student

experience. In terms of qualitative questionnaire data, it aids in understanding of the various obstacles faced by students, how to help students overcome those obstacles, barriers to help seeking, and what students believe could have prepared them for obstacles related to college. What is important here is that these responses came from students directly and in their own words. Similarly, data from focus groups adds to the understanding of the student experience through issues related to the pandemic, mental health resources in particular, and the topic of diversity on college campuses. Additionally, often neglected in research with similar goals, students were able to express how, in their own opinion, campus resources should be improved and what resources should be added. A powerful portion was what advice current students would give to incoming students. Overall, this study's approach varies to similar others, resulting in nuanced findings that could greatly enhance the college experience.

CHAPTER 4: SUMMARY

It is more important than ever to aid college students' well-being, due to the rising attention on mental health in combination with the increased strain through the COVID pandemic. Colleges have resources in place to aid in students' well-being, however, there are several barriers to seeking those resources as well as unique obstacles students face. These barriers and obstacles seem to be highly influenced by various factors and among these are the students' demographic background and previous experiences. This highlights the need for targeting those specific barriers and obstacles while still having a broad approach to student well-being. It would be important to encourage PA participation through various methods to allow for mental health benefits, even if those benefits stem from social interaction. A very important recommendation for improving overall student well-being from study 2 was the addition of a course that every incoming student (i.e., freshman and transfer) must take. The aim of this course would be to create awareness about various services and resources available to students on campus, aimed at enhancing personal and academic success in college, and overall aid in establishing a positive college experience. Additionally, qualitative results indicated the need for improved student support with academics, social interactions, and time management.

The next step for this line of research is to identify training programs and peer support programs for incoming college students to aid in their transition to college. Ideally, some of the current study findings will be able to inform this process. Establishment of such training and peer mentorship relates to some of my future career goals, including working with college athletics as well as in inner-city communities to improve well-being and potential for success through sport psychology and related interests. These goals, as well as gaining more knowledge for

successfully establishing training programs for incoming students, are supported through my current completion of my first year in a clinical and school psychology Psy.D. program.

Generally, this topic and the research findings are very dear to me due to my own undergraduate experiences as a bi-racial male. What adds to this is the feedback received from the focus groups. Especially focus group one identified struggles with their college experience, which includes a feeling of not being represented among various resources. The hope with all of this is, of course, to further improve college student well-being for all students. What I learned from this research is that there are resources in place and that there have been great strides made to allow for diversity, equity, and inclusion across campus, however, more must be done. Some qualitative and focus group responses were difficult to digest (e.g., related to bad experiences with resources, obstacles students faced, and help they needed), but they added information that would not have been noticed with a strict quantitative approach.

The mixed method approach adds much needed information about the college student experience. It also expanded my own view on different types of research approaches. Much of my research experience has been quantitatively oriented. Adding focus groups on top of a qualitative questionnaire was a significant challenge. It added much more planning, a new approach to data analysis, and a significant increase with the data all together. At times, this added work was frustrating, but it ultimately resulted in highly rewarding, insightful, and worthwhile input from students. The primary aspects which improve the research design from the qualitative questionnaires between both studies was the need to limit the number of questions to avoid participant fatigue as well as ensuring that questions are not too broad. For focus groups, the challenges included recruitment of participants. Although a number of individuals indicated willingness to participate not many of those ultimately responded to the recruitment email.

Another aspect to point out is the inclusion of the diathesis stress model in study 2. Although the data did not fit our predicted model there is still value in its inclusion. To date, there is only one other known study looking at PA which included the diathesis stress model. Being that there is limited research on this relationship it is important to further work on identifying relationships that may relate to this model, particularly in a positive psychology frame. In several cases, researchers have looked at certain demographics, as well as the diathesis stress model, from a disease model. Changing this to a perspective that focuses on how to mitigate certain influences (e.g., SES and race on mental health) may be more beneficial in identifying ways to aid individuals. One alternate approach with the diathesis stress model may be to look at PA by level of intensity (i.e., light, moderate, vigorous) in combination with PA type (e.g., strength training, cardio, team sport) and PA involvement (e.g., NCAA, club, private PA).

Taking a further look at PA, in study 2, compared to study 1, a surprising outcome was that those participating in intramural and club PA did not have significantly better mental health compared to non-physically active individuals. Part of the reason here is, of course, that intramural and club PA were not available during the time of data collection, not allowing for identification of their potential benefit on mental health. On the other hand, these results bring to question the true benefits of PA and how long those benefits last. At the time of data collection intramural and club PA was inaccessible for just over a year. In this timeframe the mental health of those participating in PA returned to the same level as those of non-physically active participants. The question coming out of this is, “is PA a coping mechanism which helps individuals overcome mental health strain, or does PA simply mask mental health struggles?” In other words, are there significant issues that need solving, however, PA only covers their

symptoms? Is PA an emotion focused coping strategy while college students need a problem focused coping strategy? Another interesting aspect when looking at this dilemma is that coping through PA disappeared during the pandemic. It may have been the most effective way of coping for some, resulting in them needing to find another way of coping. With this being the case, one would expect the mental health levels being worse for those needing to engage in PA but being unable to compared to those who do not use PA as a coping mechanism. All of these issues present opportunities for future research examining the relationship between PA, mental health and coping using the diathesis model.

APPENDICES

APPENDIX A Study 1 Human Research Protection Program Approval Letter

MICHIGAN STATE UNIVERSITY

Initial Study APPROVAL Revised Common Rule

February 18, 2020

To: Leapetswe Maletse

Re: **MSU Study ID:** STUDY00003596
IRB: Biomedical and Health Institutional Review Board
Category: Expedited 7
Submission: Initial Study STUDY00003596
Submission Approval Date: 2/14/2020
Effective Date: 2/14/2020
Study Expiration Date: **None; however modification and closure submissions are required (see below).**

Title: The Role of Recreational Sports Participation in Coping with Stress and College Adjustment



**Office of
Regulatory
Affairs
Human Research
Protection Program**

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This submission has been approved by the Michigan State University (MSU) Biomedical and Health Institutional Review Board. The submission was reviewed by the Institutional Review Board (IRB) through the non-Committee Review procedure. The IRB has found that this study protects the rights and welfare of human subjects and meets the requirements of MSU's Federal Wide Assurance (FWA00004556) and the federal regulations for the protection of human subjects in research (e.g., 2018 45 CFR 46, 21 CFR 50, 56, other applicable regulations).

How to Access Final Documents

To access the study's final materials, including those approved by the IRB such as consent forms, recruitment materials, and the approved protocol, if applicable, please log into the Click™ Research Compliance System, open the study's workspace, and view the "Documents" tab. To obtain consent form(s) stamped with the IRB watermark, select the "Final" PDF version of your consent form(s) as applicable in the "Documents" tab. Please note that the consent form(s) stamped with the IRB watermark must typically be used.

Expiration of IRB Approval: The IRB approval for this study does not have an expiration date. Therefore, continuing review submissions to extend an approval period for this study are not required. **Modification and closure submissions are still required (see below).**

Modifications: Any proposed change or modification with certain limited exceptions discussed below must be reviewed and approved by the IRB prior to implementation of the change. Please submit a Modification request to have the changes reviewed.

APPENDIX B Study 1 Demographic Questions

Q1.2 What is your age?

- ☐ 17 or younger
- ☐ 18
- ☐ 19
- ☐ 20
- ☐ 21
- ☐ 22
- ☐ 23
- ☐ 24 or older

Skip To: End of Survey If What is your age? = 17 or younger

Q1.3 What is your Gender?

- ☐ Male
- ☐ Female
- ☐ Transgender
- ☐ Intersex
- ☐ Other(please specify) _____
- ☐ Choose not to answer

Q1.4 Choose one or more races that you consider yourself to be:

- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Native Hawaiian or Pacific Islander
- ☐ Other. Please explain _____
-

Q1.5 Are you currently enrolled in a BIP course (KIN 100 to KIN 113)?

- ☐ Yes
- ☐ No
-

Display This Question:

If Are you currently enrolled in a BIP course (KIN 100 to KIN 113)? = Yes

Q1.6 What BIP course are you enrolled in? Please fill in the activity of your BIP course (ex. Basketball, Yoga, Bowling, ...)

Q1.7 Are you currently participating in on-campus or off-campus intramural physical activity or club sports?

- ☐ Intramural physical activity
- ☐ club sports
- ☐ No

Skip To: Q1.10 If Are you currently participating in on-campus or off-campus intramural physical activity or club s... = No

Display This Question:

If Are you currently participating in on-campus or off-campus intramural physical activity or club s... = Intramural physical activity

Q1.8 What intramural sport are you currently participating in?

Display This Question:

If Are you currently participating in on-campus or off-campus intramural physical activity or club s... = club sports

Q1.9 What club sport are you currently participating in?

Q1.10 What sport(s) have you participated in at a competitive level, if any (for example middle school, high school, college, club, intramural, ...)?

☐

Basketball

☐

Baseball

☐

Softball

☐

Soccer

☐

Tennis

☐

Swimming and Diving

☐

Track and Field/Cross Country

☐

Football

☐

Rowing

☐

Golf

☐

Ice Hockey

☐

Wrestling

☐

Field Hockey

☐

Gymnastics

☐

Volleyball

☐

Other _____

☐

None

Q1.11 What was the highest level you have competed in the sport you picked?

☐ Middle School

☐ High School

☐ College

☐ Club

☐ Professional

Q1.12 Do you consider yourself a US Citizen or an international student?

☐ US Citizen

☐ International student

Display This Question:

If Do you consider yourself a US Citizen or an international student? = US Citizen

Q1.13 What is your ZIP code?

Display This Question:

If Do you consider yourself a US Citizen or an international student? = International student



Q1.14 What is your home country?

Q1.15 Move the slider to your current cumulative GPA (GPA for your entire time in college)?
If this is your first semester in college, please estimate your high school GPA

0 1 1 2 2 3 3 4



Q1.16 What year are you currently in?

- ☐ Freshmen (1st year)
- ☐ Sophomore (2nd year)
- ☐ Junior (3rd year)
- ☐ Senior (4th year)
- ☐ Super senior (5th year) or over
- ☐ Graduate Student

Q1.17 How many hours a day do you spend on school work, on average?

0 2 4 6 8 10 12 14 16 18 20 22 24



Q1.18 How many hours a day do you spend in sport activity, on average?

0 2 4 6 8 10 12 14 16 18 20 22 24



Q1.19 What is the highest education level of your parents or care giver?

- ☐ Did not attend school
 - ☐ Completed some high school
 - ☐ High school graduate
 - ☐ Completed some college
 - ☐ Associates degree
 - ☐ Bachelor's degree
 - ☐ Completed some post graduate
 - ☐ Master's degree
 - ☐ PhD, law or medical degree
 - ☐ Other degree beyond master's degree
-

Q1.20 Which statement best describes your current student status?

- ☐ Full-time (currently enrolled in 12 credits or more)
 - ☐ Part-time (currently enrolled in less than 12 credit hours)
-

Q1.21 Which statement best describes your current employment status?

- ☐ Working full-time
- ☐ Working part-time
- ☐ Currently not working

Skip To: Q1.24 If Which statement best describes your current employment status? = Currently not working

Q1.22 How many hours a week do you spend working your job?

- ☐ 0-10 hours a week
 - ☐ 11-20 hours a week
 - ☐ 21-30 hours a week
 - ☐ 31-40 hours a week
-

Q1.23 Do you work on campus or off-campus?

- ☐ On campus
 - ☐ Off campus
-

Q1.24 Are you currently on scholarship?

- ☐ Full scholarship
- ☐ Partial scholarship
- ☐ No scholarship

APPENDIX C Study 1 and Study 2 Depression Anxiety Stress Scale–21 (DASS–21)

Items

DASS–21 Stress scale

I was intolerant of anything that kept me from getting on with what I was doing (14).
I felt I was rather touchy (18).
I found it difficult to relax (12).
I found myself getting agitated (11).
I felt that I was using a lot of nervous energy (8).
I found it hard to wind down (1).
I tended to over-react to situations (6).

DASS–21 Depression scale

I felt that life was meaningless (21).
I felt that I had nothing to look forward to (10).
I couldn't seem to experience any positive feeling at all (3).
I was unable to become enthusiastic about anything (16).
I felt that I wasn't worth much as a person (17).
I felt down-hearted and blue (13).
I found it difficult to work up the initiative to do things (5).

DASS–21 Anxiety scale

I was aware of the action of my heart in the absence of physical exertion (e.g., . . .) (19).
I experienced breathing difficulty (e.g., . . .) (4).
I experienced trembling (e.g., in the hands) (7).
I felt I was close to panic (15).
I felt scared without any good reason (20).
I was worried about situations in which I might panic and make a fool of myself (9). I was aware of dryness of my mouth (2).

APPENDIX D Study 1 Qualitative Questionnaire

Q3.1 For these next questions, please write as much detail as possible, in as many or as little words as you need to make your answer clear.

Q3.2 List the most stressful obstacles you have encountered since enrolling in college. List them according to how stressful they are or were, from most stressful to least stressful. (Please list up to 5 of those obstacles and only list those that you feel comfortable sharing)

Q3.3 From your list above, were you able to overcome your most stressful obstacle?

☐ Yes

☐ No

Display This Question:

If From your list above, were you able to overcome your most stressful obstacle? = Yes

Q3.4 How did you overcome your most stressful obstacle and were there any resources on campus that helped or supported you (anything that your college has in place to help students for example the counseling center, RA's or anything else)?

Display This Question:

If From your list above, were you able to overcome your most stressful obstacle? = Yes

Q3.5 What resources do you think should have been available to you in college to make it easier to overcome this obstacle and how can we improve on those?

Display This Question:

If From your list above, were you able to overcome your most stressful obstacle? = No

Q3.6 What resources do you think would have been able to help you overcome this obstacle (anything that your college has in place to help students for example the counseling center, RA's or anything else) and were they available?

Q48 Did you ever have a reason to not seek help at your school? Please list as many as you want and explain those, if you feel it to be necessary. Feel free to skip anything if you do not feel comfortable sharing

Q3.7 What do you think could have prepared you better in high school for the transition to college and success in college? In other words, is there something you wish you had learned before graduating from high school or before attending college? This could be in terms of making it easier to make friends, be successful, feel comfortable, ...

Q3.8 What has been your main driving force to be successful in college? In other words, what motivated you the most to attend college and what motivates you the most to complete college?

Q3.9 What are some ways that you stayed motivated through tough times, in particular? Please explain.

Q3.10 Are there any specific psychological skills that you learned, taught yourself, or had a friend or family member teach you about? If so, what were those and how did you learn about them (please be detailed about this question. Ex. Which family member taught you and how? How did you become good at them?)

Q3.11 Do you believe that participating in recreational sport/exercising has helped you cope with your daily stress?

☐ Yes

☐ No

Display This Question:

If Do you believe that participating in recreational sport/exercising has helped you cope with your... = Yes

Q3.12 Please, briefly list ways in which recreational sport/exercising has helped you cope with your daily stress?

APPENDIX E Study 2 Human Research Protection Approval Letters

MICHIGAN STATE UNIVERSITY

Modification / Update APPROVAL Revised Common Rule

March 31, 2021

To: Leapetswe Malete

Re: **MSU Study ID:** STUDY00003596
IRB: Biomedical and Health Institutional Review Board
Principal Investigator: Leapetswe Malete
Category: Expedited 7
Submission: Modification / Update MOD00003484
Submission Approval Date: 3/31/2021
Effective Date: 3/31/2021
Study Expiration Date: **None; however modification and closure submissions are required (see below).**

Title: The Role of Recreational Sports Participation in Coping with Stress and College Adjustment



**Office of
Regulatory
Affairs
Human Research
Protection Program**

4000 Collins Road
Suite 136
Lansing, MI 48910

517-355-2180
Fax: 517-432-4503
Email: irb@msu.edu
www.hrpp.msu.edu

This submission has been approved by the Michigan State University (MSU) Biomedical and Health Institutional Review Board. The submission was reviewed by the Institutional Review Board (IRB) through the Non-Committee Review procedure. The IRB has found that this study protects the rights and welfare of human subjects and meets the requirements of MSU's Federal Wide Assurance (FWA00004556) and the federal regulations for the protection of human subjects in research (e.g., 2018 45 CFR 46, 21 CFR 50, 56, other applicable regulations).

This letter notes approval for the addition of SUNY Brockport as a site for this project. This letter also notes that MSU is the IRB of record for SUNY Brockport for this project. A fully executed IRB Authorization Agreement is on file.

This letter also notes approval for the revised consent, revised recruitment letter revised questionnaire and the addition of a focus group plus focus group questions.

How to Access Final Documents

To access the study's final materials, including those approved by the IRB such as consent forms, recruitment materials, and the approved protocol, if applicable, please log into the Click™ Research Compliance System, open the study's workspace, and view the "Documents" tab. To obtain consent form(s) stamped with the IRB watermark, select the "Final" PDF version of your consent form(s) as applicable in the "Documents" tab. Please note that the consent form(s) stamped with the IRB watermark must typically be used.

Expiration of IRB Approval: The IRB approval for this study does not have an expiration date. Therefore, continuing review submissions to extend an approval

**MICHIGAN STATE
UNIVERSITY**

**Modification / Update APPROVAL
Revised Common Rule**

April 16, 2021

To: Leapetswe Malete

Re: **MSU Study ID:** STUDY00003596
IRB: Biomedical and Health Institutional Review Board
Principal Investigator: Leapetswe Malete
Category: Expedited 7
Submission: Modification / Update MOD00003808
Submission Approval Date: 4/11/2021
Effective Date: 4/11/2021
Study Expiration Date: **None; however modification and closure**
submissions are required (see below).

Title: Physical Activity Participation and Coping in College

This submission has been approved by the Michigan State University (MSU) Biomedical and Health Institutional Review Board. The submission was reviewed by the Institutional Review Board (IRB) through the Non-Committee Review procedure. The IRB has found that this study protects the rights and welfare of human subjects and meets the requirements of MSU's Federal Wide Assurance (FWA00004556) and the federal regulations for the protection of human subjects in research (e.g., 2018 45 CFR 46, 21 CFR 50, 56, other applicable regulations).



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Human Research
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www.hrpp.msu.edu

This letter acknowledges changes to the study team.

Institutional restrictions to in-person human subject research activities conducted by MSU employees, MSU students, or agents of MSU are in place, but MSU is phasing in human research that has the potential for in-person interactions with participants, using a Tier approach. Restrictions to in-person interactions with human research participants by MSU employees, MSU students, or agents of MSU are in place until the activity is permitted under a Tier and a Human Research Plan for a Safe Return is approved. Visit <http://hrpp.msu.edu/COVID-19/index.html> for the restrictions, Tiers, forms, and the process.

How to Access Final Documents

To access the study's final materials, including those approved by the IRB such as consent forms, recruitment materials, and the approved protocol, if applicable, please log into the Click™ Research Compliance System, open the study's workspace, and view the "Documents" tab. To obtain consent form(s) stamped with the IRB watermark, select the "Final" PDF version of your consent form(s) as applicable in the "Documents" tab. Please note that the consent form(s) stamped with the IRB watermark must typically be used.

APPENDIX F Study 2 Demographics Questionnaire

Q2.1 What is your age?

- ☐ 17 or younger
- ☐ 18
- ☐ 19
- ☐ 20
- ☐ 21
- ☐ 22
- ☐ 23
- ☐ 24 or older

Skip To: End of Survey If What is your age? = 17 or younger

Q2.2 What is your Gender?

- ☐ Male
- ☐ Female
- ☐ Transgender
- ☐ Intersex
- ☐ Other (please specify) _____
- ☐ Choose not to answer

Q2.3 What is your race:

- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native
- ☐ Other (Please explain) _____
- ☐ Asian
- ☐ Native Hawaiian or Pacific Islander
- ☐ Mixed Race

Q55 What is your major?

Q2.4 Are you currently participating in intramural physical activity, club sport, NCAA sports, personal/unstructured physical activity, or a physical activity class?

- ☐ Intramural physical activity
- ☐ club sports
- ☐ NCAA sport
- ☐ Personal/unstructured physical activity (e.g., weight lifting, running, yoga, ...)
- ☐ Physical activity class
- ☐ No

Skip To: Q2.7 If Are you currently participating in intramural physical activity, club sport, NCAA sports, persona... = No

Q2.5 Relating to your response above, what physical activity are you participating in most?

☐ Aerobic Exercise

☐ Baseball

☐ Basketball

☐ Biking

☐ Boxing

☐ Field Hockey

☐ Football

☐ Golf

☐ Gymnastics

☐ Hiking

☐ Ice Hockey

☐ Paddleboarding

☐ Rowing

☐ Sailing

☐ Softball

☐ Soccer

☐ Swimming and Diving

☐ Swimming

☐ Tennis

- ☐ Track and Field/Cross Country
- ☐ Other (please specify) _____
- ☐ Volleyball
- ☐ Weightlifting
- ☐ Wheelchair sports
- ☐ Wrestling
- ☐ Walking
- ☐ Yoga
- ☐ None

Q2.6 How many hours a day do you spend in physical activity, on average (e.g. intramural, club, NCAA, personal/unstructured physical activity, or class)?

0 2 4 6 8 10 12 14 16 18 20 22 24



Q2.7 Do you consider yourself a US Citizen or an international student?

- ☐ US Citizen
- ☐ International student

Display This Question:

If Do you consider yourself a US Citizen or an international student? = International student

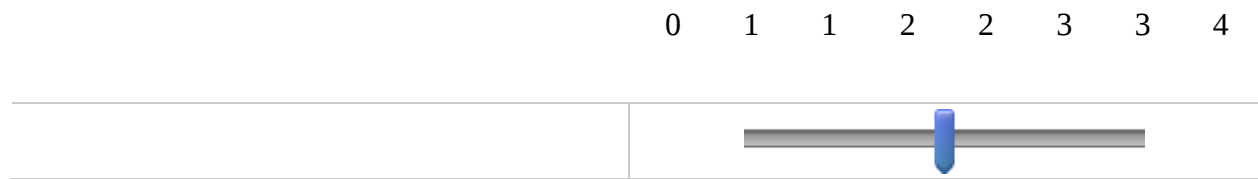


Q2.8 What is your home country?

Q2.9 What year are you currently in?

- ☐ Freshmen (1st year)
- ☐ Sophomore (2nd year)
- ☐ Junior (3rd year)
- ☐ Senior (4th year)
- ☐ Super senior (5th year) or over
- ☐ Graduate Student

Q2.10 Move the slider to your current cumulative GPA (GPA for your entire time in college)?
If this is your first semester in college, please estimate your high school GPA



Q2.11 How many hours a day do you spend on school work, on average?



Q2.12 What is the highest education level of your parents or care giver?

- ☐ High school graduate or below
- ☐ Education after high school other than 2-year or 4-year college (e.g. trade school)
- ☐ Attended or graduated from college (bachelor's degree)
- ☐ Master's degree or above

Q2.13 Which statement best describes your current student status?

- ☐ Full-time (currently enrolled in 12 credits or more)
 - ☐ Part-time (currently enrolled in less than 12 credit hours)
-

Q2.14 Which statement best describes your current employment status?

- ☐ Working full-time
- ☐ Working part-time
- ☐ Currently not working

Skip To: Q2.16 If Which statement best describes your current employment status? = Currently not working

Q2.15 How many hours a week do you spend working your job?

- ☐ 0-10 hours a week
 - ☐ 11-20 hours a week
 - ☐ 21-30 hours a week
 - ☐ 31-40 hours a week
-

Q2.16 Are you currently on scholarship?

- ☐ Full scholarship
 - ☐ Partial scholarship
 - ☐ No scholarship
-

Q2.17 What university are you currently attending?

- ☐ (Large University)
- ☐ (Small University)
- ☐ Other (please specify) _____

APPENDIX G Study 2 College Experience Questionnaire

Q4.1 For these next questions, please write as much detail as possible, in as many or as little words as you need to make your answer clear.

Q4.2 List the most stressful obstacles you have encountered since enrolling in college. List them according to how stressful they are or were, from most stressful to least stressful. (Please list up to 5 of those obstacles and only list those that you feel comfortable sharing)

Q4.3 From your list above, were you able to overcome your most stressful obstacle?

☐ Yes

☐ No

Display This Question:

If From your list above, were you able to overcome your most stressful obstacle? = Yes

Q4.4 How did you overcome your most stressful obstacle and were there any formal and/or informal resources on campus that helped or supported you?

Display This Question:

If From your list above, were you able to overcome your most stressful obstacle? = Yes

Q4.5 Do you have any suggestions for on-campus resources that would have made you more successful in overcoming your most stressful obstacle?

Display This Question:

If From your list above, were you able to overcome your most stressful obstacle? = No

Q4.6 What on-campus resources, formal or informal, do you think would have been able to help you overcome your most stressful obstacle (anything that your college has in place to help students), were they available, and how can we improve their usefulness?

Q4.7 Have there been any barriers that have impacted you to not seek assistance for your most stressful obstacle.

Q4.8 What do you think could have prepared you better in the transition from high school to college?

Q4.9 What has been your main driving force to be successful in college? In other words, what motivated you the most to attend and complete college?

- ☐ Your support (e.g. family, friends, etc.)
 - ☐ Career (e.g. job, financial stability, etc.)
 - ☐ A good future
 - ☐ Yourself (e.g. doing it for yourself, personal fulfillment, etc.)
 - ☐ other (please explain) _____
-

Q4.10 Do you believe that participating in physical activity (e.g. intramural physical activity, club sport, NCAA sports, personal/unstructured physical activity) has helped you cope with your daily stress?

- ☐ Yes
 - ☐ No
-

Display This Question:

If Do you believe that participating in physical activity (e.g. intramural physical activity, club s... = Yes

Q4.11 Please rank the ways in which participating in physical activity has helped you cope with stress.

At the top should be the most important aspect. At the bottom should be the least important aspect.

- _____ Giving me time away from stress or allows me to relax
- _____ Allowing me to release stress or release emotions
- _____ Allowing me to interact with my friends
- _____ Allowing me to accomplish something
- _____ Helps boost my mood or have fun
- _____ Other (Please specify)

APPENDIX H Study 2 Focus Group Guide

The interview will be semi-structured and generally follow the guide below. Each participant will be given a number for identification purposes.

Introduction

1. Review the following:
 - a. Who I am and what I am trying to do
 - b. What will be done with this information
 - c. Why we asked you to participate
 - d. “Personal stories and opinions that are said during the group interview will stay within the context of the discussion and not be spoken about or shared outside the session.”
2. Explanation of the process
 - a. Share the process of the interview
 - i. We learn from you (positive and negative)
 - ii. No right or wrong answers I am gathering information
 - iii. The focus groups help me explore topics in more detail than through the written survey.
 - iv. You do not have to answer every question
 - v. Conversation will be audio-recorded, not visually recorded
3. Logistics
 - a. Interview will last 60 to 90 minutes
 - b. Keep microphone and video on

Icebreaker

1. What year are you?
2. How have you been handling the COVID-19 pandemic?
3. How has it affected your PA participation?
4. How strenuous was the online questionnaire?

Campus Resources

1. How to improve on-campus resources (increase usage rate, effectiveness, ...)?
2. How do you believe we can make on-campus resources more accessible?
3. What resources does the campus need to add (why)?
4. What existing on-campus resources are good (specifics)?
5. How have things changed regarding on-campus resource access since the beginning of the pandemic?

Student Obstacles

1. What do you believe most students struggle with once entering college?
2. Are there any specific obstacles you have noticed regarding individuals from your demographic (race, gender, PA type)?

3. What suggestions would you give students that are going through similar obstacles as you have (Do not have to mention their own obstacles)?

In-case of distress:

- (Small university) resources
 - Health center and Counseling center: (585) 395-2414 (Phone)
- (Large university)
 - Counseling center
 - In crisis (517) 355-8270 and press “1” at the prompt
 - Health center
 - (517) 353-4660

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