2019

# Full Issue

Winthrop McNair Research Bulletin
*Winthrop University*, McNair@Winthrop.edu

Follow this and additional works at: https://digitalcommons.winthrop.edu/wmrb

Part of the Behavioral Disciplines and Activities Commons, Community Health and Preventive Medicine Commons, Community Psychology Commons, Critical and Cultural Studies Commons, Developmental Biology Commons, Educational Assessment, Evaluation, and Research Commons, Exercise Science Commons, Genetic Processes Commons, Genetics and Genomics Commons, Health and Physical Education Commons, Health Services Research Commons, Mental Disorders Commons, Politics and Social Change Commons, Psychological Phenomena and Processes Commons, Race and Ethnicity Commons, Scholarship of Teaching and Learning Commons, Social Justice Commons, Social Media Commons, Social Work Commons, Sports Studies Commons, and the Women's Studies Commons

## Recommended Citation

# The Winthrop McNair Research Bulletin

## 2018-19

## Volume 5

*Winthrop McNair Research Bulletin* volumes are available online at:

http://digitalcommons.winthrop.edu/mcnair/

# Table of Contents                              Page

# Invisible Barriers:
# Experiences of First-Generation College Student Navigating Academia

Frances "Ana" Barkley
Sherell Fuller, Ph.D. (Mentor)

## ABSTRACT

Twenty-four percent of undergraduates in the US are considered first-generation and low-income (Engle & Tinto, 2008), while TRiO student support services serve less than 5% of these students (Mortenson, 2011). Previous research reveals that these students are less prepared for collegiate-level academic rigor, have fewer financial resources, and have less cultural and social capital compared to their non-first-generation and non-low-income peers (Engle & Tinto, 2008; Chen & Carroll, 2005; Engle, 2007, Willet 1989). Based on their testimonies, are there specific challenges that first-generation, low-income students are currently experiencing while navigating higher education in 2018? How can these testimonies inform the development of support services for these students? This study explores the financial, social, and academic domains first-generation, low-income students traverse while also examining the existing systems that support them. Participants were recruited through the university's TRiO program as well as word of mouth. Seven upperclassmen and one recent graduate who are considered first-generation and low-income from a Southeastern liberal arts university participated in 60-minute semi-structured interviews. Data were analyzed using Saldaña's (2013) method of qualitative coding. Emerging themes of work-life balance and cultural and social capital are discussed. These findings reveal areas of support that could be built upon for the institution in question as well as other similar institutions.

## INTRODUCTION

Twenty-four percent of undergraduates— 4.5 million students— are considered first-generation, low-income students in the United States. These students are 4 times as likely to leave after their first year, with only 11% of them earning a degree within 6 years (Engle & Tinto, 2008). In 2012, there was a 30 percentage-point difference in college enrollment rates between families from the highest and lowest income quintile (Baum, Ma, & Payea, 2013). Federal TRiO student services exist to provide a net of support to first-generation, low-income students in higher education, however, these programs serve less than 5% of the total population of these students (Mortenson, 2011).

### Definitions of First-Generation and Low-Income College Students

According to section 402A of the U.S. Higher Education Act of 1965, a first-generation college student is defined as "(A) an individual both of whose parents did not complete a baccalaureate degree; or (B) in the case of any individual who regularly resided with and received support from only one parent, an individual whose only such parent did not complete a baccalaureate degree" (U.S. Department of Health, Education, and Welfare, Office of Education, 1965, pg. 202). The U.S. Department of Education's National Center for Education Statistics, however, defines first-generation students as "undergraduates whose parents never enrolled in postsecondary education" (U.S. Department of Education, 1998).

A few points should be noted about these definitions. Neither of these definitions include siblings or extended family members' educational attainment as factors to be considered. These definitions would also qualify a student whose parent had an associate degree as first-generation. These definitions do not specify if the "parent" is biological and living.

This may mean that a student who had been orphaned at a young age would not be considered first generation if either of the deceased parents obtained a baccalaureate degree or above. These definitions do not account for instances in which the biological parents are absent from the student's life and the student is supported by extended family.

The U.S. Higher Education Act of 1965 also defines a low-income individual: "The term 'low-income individual' means an individual from a family whose taxable income for the preceding year did not exceed 150 percent of an amount equal to the poverty level determined by using criteria of poverty established by the Bureau of the Census" (U.S. Department of Health, Education, and Welfare, Office of Education, 1965, pg. 202).

## Features of First-Generation, Low-Income Students

**Identity.** There are several significant features and patterns of this population of college students that distinguish them from peers from more advantaged backgrounds. These students tend to be from an ethnic and/or racial minority group. They tend to be female, older, and have dependent children (Engle, 2007).

**Academic performance.** First-generation, low-income students tend to be less academically prepared for the rigors of higher education and earn lower GPAs throughout their college career (Engle & Tinto, 2008; Chen & Carroll, 2005; Engle, 2007). First-generation, low-income students spend less time studying, less time interacting with faculty, and are less likely to utilize student support services (Engle, 2007). They are more likely to be dissatisfied with their major, repeat courses, and take longer to complete a degree (Chen & Carroll, 2005). First-generation students tend to have "lower educational aspirations" as well as "less encouragement and support to attend college, particularly from parents" (Engle, 2007, p. 28).

**Financial resources.** First-generation, low-income students receive little to no financial support from their parents or guardians, and work part-time or full-time in order to support themselves. As a result, they are less likely to be engaged in personal and professional development activities (Cooke et al., 2004). As

the value of federal student aid is declining, unmet financial need among students in the lowest income quartile has doubled since 1990. The Average Net Price of a college education encompassed 84% of the average family income for students in the lowest income quartile in 2012, while the Average Net Price encompassed 15% of average family income for students in the top income quartile (Calahan & Perna, 2015). In other words, college costs are steadily increasing, while the extent of financial aid support available is decreasing.

**College readiness.** First-generation students are less likely to have access to information regarding the college experience (Willett, 1989). Due to financial and transportation restrictions, students from low-income families are less likely to participate in extracurricular activities during high school and are more likely to work part-time jobs to contribute to family income (Lareau, 2003). Consequentially, these students are less competitive for scholarship programs, leadership positions, and extracurricular appointments than their peers who have had robust high school experiences in leadership and extracurriculars. Students are also less likely to pursue extracurricular campus involvement until they feel confident in their academic performance in the college setting (Somer, Woodhouse & Cofer, 2004; Terenzini et al., 1994). Cooke et al. also note that first-generation, low-income students are more likely to seek paid employment than they are to pursue non-academic activities or socializing activities (417). Earning income to support themselves and/or their families may take precedence over building their resume. Internships and volunteering opportunities that offer no pay to the participant or even require the participant to pay a fee is not a feasible option for first-generation, low-income students who must devote time to earning income to support themselves, leaving the student with an opportunity missed. As Cooke et al., notes, "many students from disadvantaged backgrounds had to take paid employment to pay their rent and provide food" (409).

The difference in language function across class also impacts the students' success in college. As Lareau observed in low-income

families, "Language serves as a practical conduit of daily life, not as a tool for cultivating reasoning skills or a resource to plumb for ways to express feelings or ideas" (146). It is no surprise, then, that Pascarella et al. (1995) found that first-generation, low-income students demonstrated lower critical thinking skills.

**Cultural capital.** Given their lack of experience in higher education, parents of first-generation students are less likely to guide their child to take steps to be adequately prepared for college admission and culture. For instance, Engle notes: "...it is not unexpected that first-generation students report that their parents are less likely to encourage them to take algebra in eighth grade as well as less likely to be involved in helping students choose their high school courses" (29). Students may very well be left on their own to pursue college applications, which, without any guidance, may result in missing important deadlines or opportunities.

These students report having less support and encouragement from their parents: a result of parents' suspicion of college as a worthwhile investment, loan aversion, and/or the need for additional income and the expectation of the child to contribute (Engle, 2007). The student may also grapple with interfamilial tension, or "separation drama,": "For F-gen students, however, 'going to college constituted a major disjunction in their life course . . . they were breaking, not continuing, a family tradition'" (Terenzini et al., 1994, as cited in Somers, Woodhouse & Cofer, 2004). The transition from home to college is made easier when values, beliefs, and expectations are congruent across each environment (Somers, Woodhouse & Cofer, 2004; Phelan, Davidson, and Cao, 1991). After the student has spent significant time in college, the student may find they are unable to relate to and connect with their previous friends and family members, and vice versa (Engle, 2007). First-generation, low-income students are also less likely to develop close friendships with their peers in college, which may even further inhibit their development of cultural capital and be a detriment to their emotional well-being (Engle, 2007). Once in college, first-generation college students may not have immediate family members with the cultural capital needed to navigate the complex bureaucratic processes of higher education, contributing to frustration and attrition (Engle & Tinto, 2008). In addition to the tensions that exist in the family, the student may experience feelings of isolation among their peers. These students are "never quite wanting or willing to break with their past, even if permitted to do so, and never fully accepted, because of prejudice in the culture where they seek a place" (London, 1992, p. 7).

### Strategies for Inclusion: What are other Institutions doing that has Worked?

**Financial resources.** To ease financial burdens for first-generation, low-income students, universities can provide accessible information and workshops for families regarding financial aid processes, completing the FAFSA, comprehensive scholarship opportunities overview, unmet need options, and long-term planning (Engle & Tinto, 2008). Perna (2015) recommends that universities target federal TRiO programs, and other similar programs, to reach students with the greatest financial need. University faculty and staff need not overlook and underestimate the barriers of hidden financial costs of college admissions on low-income families, such as admissions tests and application fees. As Engle (2007) notes, "When, where, and how first-generation students, many of whom come from low-income backgrounds, attend college are all affected by inadequate financial aid and/or lack of information about how to obtain it" (p. 39). Therefore, efforts to increase financial aid options and increase the visibility of financial aid information for low-income families, on-campus and online, may be made.

**Cultural capital.** Cultural support strategies for first-generation, low-income students include need-based scholarship programs that provide social, financial, and emotional support for students to establish a sense of belonging within their academic communities (Means & Pyne, 2017). Social, identity-based student organizations, such as University of Pennsylvania's Penn First program, also provide emotional support through the opportunity to feel solidarity in first-generation, low-income challenges. Through workshops and

events, these programs also impart cultural capital, demystifying and explicating the unwritten rules of academia. More intimate and individualized peer and/or faculty mentoring for these students also fills this role (Somers, Woodhouse & Cofer, 2004; Engle & Tinto, 2008). Means & Pyne (2017) found that "faculty were one of the most important variables for their sense of belonging within [academia]," study sessions held after class were helpful, and first-generation, low-income students felt more comfortable emailing a professor when the professor regularly emailed the class (p. 917-919).

## METHOD

The goal of this research is to identify holes in an institution's support system for first-generation, low-income students. This research may shed light on invisible barriers that FGLIs face that go unnoticed to university faculty and staff. Of course, this study lies on the assumption that first-generation, low-income students at this university are in need of additional support.

### Participants

Data come from eight semi-structured interviews with students at a small southeastern public university. After completing the interview guide, the researcher obtained approval from Winthrop's Institutional Review Board. Because it was the summer term at the time of research, the research team faced a challenge in recruiting students who identified as first-generation, low-income and were also living in the area. Multiple staff members in TRiO were contacted to help with recruiting participants. The researcher received names and phone numbers of students who had agreed to participate in the study from the campus' TRiO office. One student was recruited via word of mouth. Each of these participants were currently living in the area during the summer. All students identified as first-generation and low-income.

### Materials and Procedure

The researcher opted for an interview format over a survey, knowing the participants may have been more hesitant to share information in an online survey, less willing to type and therefore given less information, and more easily distracted from the task. All interviews were conducted in an office on campus, audio recorded with the participant's consent, and later transcribed verbatim by the researcher. The one-on-one interviews, lasting 60 minutes on average, allowed each participant to explain with detail and depth their experiences before and during college. Each interview began with completing an informed consent agreement with the participant. The purpose of the research was then explained to the participant in more detail. Permission to record audio of the interview was obtained. Confidentiality was then discussed; the participant was informed that the research team would not use their real names in the research manuscript or in the notes taken during the interview, nor would their names be spoken by the interviewer during the recording. Finally, participants were asked if they had any questions before the interview began. The interview guide contained 18 guiding questions, organized into 5 categories: preliminary questions, physiological needs, safety and security needs, social support, and university experiences. The interview guide was refined after the first two interviews to include questions about parental educational attainment, the transition to college, and the culture of home versus the culture of college. Not all questions were asked during each interview, and many questions were ad-libbed during interviews. In other words, the researcher frequently diverted from the interview guide to follow-up on certain statements made. The interview guide was not strictly followed in terms of question succession. The interviewer always started with preliminary questions, but chose questions from other sections according to what felt natural to the conversation.

## RESULTS
### Data Analysis

A total of 5 interviews were transcribed and analyzed. Four of the five participants were involved with TRiO; two were male, three were female; three were African-American, one was biracial, and one was Caucasian (see Figure 1). Data were analyzed with Saldaña's (2013) method of qualitative coding. After each recording of the interviews were transcribed, they were coded for challenges and supports. Going through one transcription at a time,

sentiments that expressed challenges in the transcripts were highlighted in yellow in a word processor. After denoting all challenges, the transcription was then coded for supports, highlighted in green. After repeating this process with all 5 transcriptions, all challenges were compiled into one document. The pseudonyms of each participant headed each section of challenges. Then, the researcher assigned preliminary codes to each challenge. After assigning all preliminary codes, final codes that are conceptually broader in scope were assigned to one or more challenges. Through this method of analysis, several major themes of challenges and supports emerged from the 5 interviews conducted, two of which will be discussed in depth: work-life balance, and cultural and social capital.

### Work-Life Balance

Most participants discussed how working as much as they do interferes with their ability to succeed academically, to insert themselves into the social community, and to get involved on campus. Amber, a junior social work major, discussed how working cuts into her study time:

> Amber: "I would get off at 10 [PM] after going to classes that entire day… I was exhausted… then you deal with every kind of attitude that you seen in the world at Walgreens. Kinda like, 'Now I don't wanna study. I just wanna take a shower and then eat and go to sleep."

Amber also talked about how working interferes with her ability to study:

> Amber: "When I was at work, I was like, I could be spending these like five or six hours studying. Or I could be working on that project that I kept putting off, but now I have to go to work."

Another interviewee, Amy, explained how the need to work interferes with her ability to get involved with extracurricular activities on campus:

> Amy: "I do work a lot and that doesn't leave a lot of time for outside activity or clubs… ."

She goes on to explain how working impairs her ability to develop a well-rounded social support system at her university.

> Amy: "I have very little social interaction at [university]… I haven't really built any friendships since being here. I pretty much just talk to my family and my boyfriend…when I do have time outside of working, I kind of just want to go home and see my boyfriend or relax or something."

Another student, Taylor, echoed that sentiment. When asked if she was involved on campus, Taylor responded:

> Taylor: "No, not really. I would go to some TRiO events… I usually just work 'cause I work Saturday, Sunday, Monday, Wednesday, Friday, sometimes Thursdays… ."

Taylor was also unable to pursue unpaid internships because of working.

> Taylor: "Because… the internships mostly were not paid… So it would be beneficial, but then again… I still have to work."

When asked what she would ideally use her summers for, Amber responded:

> Amber: "Honestly I would have wanted to start like an internship at a nursing home… I would just love to have did something else other than work."

### Cultural and Social Capital

A theme that was quite pervasive throughout each interview was the students' experience obtaining the cultural and social capital needed to be successful in college when the parents could not provide it. Almost all participants spoke to this concept in some form.

When asked about his parents' role in his application process, Ethan responded:

> Ethan: "[T]hey didn't really have role. It was all me. They just wanted me to go to college, but they couldn't really help me with it… My parents don't really understand a lot of stuff, so I go over it with them."

Amy, a Senior English major, echoed that sentiment when speaking of her dad, who'd only completed one semester of college before dropping out to serve in the military.

> Amy: "And so he--it was really different back whenever he went to college, so he really didn't have insight into it. Didn't know what to do with it. And for the most part, I was kinda doing it all on my own."

Taylor, a recent graduate, also had the same experience with her parents.

> Taylor: "I basically did everything on my own. If I needed help or asked questions, my mama… they didn't really know what to do. I just figured it out for myself or… asked my elementary school guidance counselor. But as far as my parents' role… it was almost [nonexistent]."

The majority of participants' parents had no college experience whatsoever, yet there existed a clear difference in how some parents responded to the lack of familiarity with the college process. Benjamin, a senior exercise science major who was involved with TRiO, spoke to far more supports, especially from his mother and father, than he spoke to any challenges he faced. When asked about his parent's role in his college pursuit, he said:

> Benjamin: "They sat in the guidance counselor's office at school with me and tried to get waivers for application fees for college… my parents… had a meeting with the lady back home, and

they really set up a good situation for me to be in [Upward Bound]."

He also discussed how his parents monitored his application process.

> Benjamin: "Everything I did online as far as [applying to the university]... they checked over it all… they were my personal checklist…Anytime that I needed to be up here [at the university] for TRiO or anything... they made sure I was here. They took off from work, they drove me up here. I never had to ask any other family member for anything when it came to the process."

Benjamin also discussed how his community played a role in sending him to college:

> Benjamin: "So my mom… really didn't have the money to get everything I needed. But my church and people I knew around our community they donated… they gave me stuff… they gave me money… I had people buying me… just regular household stuff that I was needing to put in the dorm. So most of that was taken care of."

Benjamin was an exceptional case in that when his parents lacked the cultural capital, they sought it on his behalf. The parents of most other participants were less involved. Some parents were not at all involved. For instance, Amber's parents were quite hands-off compared to Benjamin's. Below she explains her family's promotion of a college pursuit during high school versus their hesitation once they were confronted with the costs:

> Amber: "[E]ven though it was like everybody always told me to [go to college], I kinda got down about it once I realized...my mom wasn't going to help me financially or my step dad, even though they both have the means to, in a way… [B]ut both of them were like 'Well, this is you going to college, not us, so we can't really help you in that aspect.'

But at first, she always told me, 'You have to go to college to get a good job. If you want a good paying job, go to college.' And even once the price started coming in, [my stepdad] was like 'Well, you know maybe you should take up a different trade or something.'"

Amber's family was also less involved during the application process than Benjamin's. Below she discusses FAFSA:

Amber: "When it came time to--especially with FAFSA, oh my god. My mom didn't know anything about it. My mom didn't have an email address…[O]nce it started getting into her business, she was just kinda like 'Why do you need all this for *your* FAFSA?'... But she was...hindering the process in a way… ."

Amber also discussed other tasks involved in the college application process.

Amber: "But my mom and my step dad… no kinda help on college tours. They didn't even ask me when I had any, like did I enjoy them… nothing of that sort. I had to *beg* her to take me to the [TRiO] interview."

Considering all interviewees, Benjamin and Amber represented the two extremes of the spectrum of parental support. However, they were both able to tap into their social networks to obtain social and cultural capital. As we've seen, Benjamin's social capital extended beyond his family into his community, his church members, and his extensive fraternity community. Because of these connections, Benjamin almost always had his needs met. Amber expressed much frustration over her parents' lack of emotional and financial support, while attributing much of her success to Upward Bound, her godmother, TRiO staff and resources, and her sister.

Amber: "I was in a program called Upward Bound in high school, which

actually, I like to kinda give them props because they're the only ones who like, really helped me get into college."

## DISCUSSION

The objective of this research was to answer the following questions: Based on their testimonies, are there specific challenges that first-generation, low-income students experience while navigating higher education? How can these testimonies inform the development of support services for first-generation, low-income students?

The results of the research revealed at least two areas of obstacles of first-generation, low-income students to be addressed: work-life balance and cultural capital. Students cited working as a barrier to studying, getting connected on campus, pursuing extracurricular activities, and pursuing unpaid internships. Students also discussed a lack of resources and mentoring as a barrier to their success. Students who had an extended social network (family, friends, Greek organizations, extracurricular connections) spoke to more supports than students who had a limited social network.

This research sought to understand how these testimonies can guide higher education spheres to build better supports for this population of students. Considering university-sponsored supports, one could consider connecting these students with on-campus jobs that give them the flexibility to study while they work. For instance, some university residence halls employ students as desk hosts. These students are permitted to use the desk computer for schoolwork while they aren't assisting residents. Other similar positions include computer lab monitors and library attendants. In addition to making these positions available, publicizing them to the student body, especially to first-generation, low-income students, would also be necessary. Students who lack the cultural capital of the university environment may not know exactly where to go to find a campus job, what kinds of campus jobs will be available, or even that campus jobs exist at all.

Focusing on cultural capital, students who participated in the TRiO program at this particular university cited the office and its staff

as a support numerous times. This office was equipped with counselor-type staff members who are able to give the students one-on-one attention and advice about their college and career plans and goals. Unfortunately, the students who are not participating in the TRiO program--or who are unaware of its existence--may not have an open, comparable resource on campus that is as invested in their success. To combat this, designated spaces can be established for students who need access to cultural capital. This may include academic advice, connection to certain resources, textbook loan systems, a place to report food insecurity, tuition advice and guidance, etc.

Further, other universities are building faculty and/or peer mentoring programs for vulnerable student populations, including first-generation and/or low-income students. These mentors will be able to provide individualized attention to students to guide them with academic success habits, financial advice, as well as connect them with campus resources.

### Limitations

This research included an overrepresentation of upperclassmen at a particular university. Considering upperclassmen have had time to develop the skills and knowledge necessary for college success, underclassmen ought to be considered in tandem with upperclassmen. It should also be noted that only 5 students were interviewed, 4 of which participated in the TRiO program. In the future, an equal representation of TRiO and non-TRiO students ought to be included. In addition, a larger sample size will better depict the experiences of this population of students.

Diversity of the participant pool also ought to be targeted. Three out of five participants were African American, one was biracial, and one was Caucasian. The inclusion of other racial and ethnic minorities, along with minorities of ability and sexuality, would be ideal.

The research team consisted of only 1 researcher, the author, and the researcher's identity and experiences align with those of the participants. This may very well lead to interview bias. A team of two to three researchers to design interviews, conduct interviews, and code data would bolster the validity and reliability of the research.

### REFERENCES

Cahalan, M., & Perna, L. (2015). Indicators of Higher Education Equity in the United States: 45 Year Trend Report. *Pell Institute for the Study of Opportunity in Higher Education.*

Chen, X., & Carroll, C. D. (2005). First-Generation Students in Postsecondary Education: A Look at Their College Transcripts. Postsecondary Education Descriptive Analysis Report. NCES 2005-171. *National Center for Education Statistics.*

Cooke, R., Barkham, M., Audin, K., & Bradley, M. (2004). How social class differences affect students' experience of university. *Journal of Further and Higher Education*, 28(4), 407-421.

Creswell, J. (2003). *Research design : Qualitative, quantitative, and mixed method approaches* (2nd ed. ed.). Thousand Oaks, Calif.: Sage Publications.

Engle, J. (2007). Postsecondary access and success for first-generation college students. *American Academic*, 3(1), 25-48.

Engle, J., & Tinto, V. (2008). *Moving beyond access: College success for low-income, first-generation students.* Washington, DC: The Pell Institute for the Study of Opportunity in Higher Education.

Lareau, A. (2003). *Unequal childhoods : Class, race, and family life.* Berkeley: University of California Press.

London, H. B. (1992). Transformations: Cultural challenges faced by first-generation students. *New directions for community colleges*, 1992 (80), 5-11.

Means, D. R., & Pyne, K. B. (2017). Finding My Way: Perceptions of Institutional Support and Belonging in Low-Income, First-Generation, First-Year College Students. *Journal of College Student Development*, 58(6), 907-924.

Pascarella, E. et al. (1995). What have we learned for the first year of the National Study of Student Learning? Washington, D.C.: Office of Educational Research and Improvement. (ERIC: ED 281 054)

Perna, L. W. (2015). Improving college access and completion for low-income and first-generation students: The role of college access and success programs.

Phelan, P., Davidson, A. L., & Cao, H. T. (1991). Students' multiple worlds: Negotiating the boundaries of family, peer, and school cultures. *Anthropology & Education Quarterly*, 22(3), 224-250.

Somers, P., Woodhouse, S. R., & Cofer Sr, J. E. (2004). Pushing the boulder uphill: The persistence of first-generation college students. *Naspa Journal*, 41(3), 418-435.

Terenzini, P. T., Rendon, L. I., Upcraft, M. L., Millar, S. B., Allison, K. W., Gregg, P. L., & Jalomo, R. (1994). The transition to college: Diverse students, diverse stories. *Research in higher education*, 35(1), 57-73.

U.S. Department of Education. National Center for Education Statistics. FirstGeneration Students: Undergraduates Whose Parents Never Enrolled in Postsecondary Education, NCES 98-082, by Anne-Marie Nunez and Stephanie Cuccaro-Alamin. Project officer: C. Dennis Carroll. Washington DC: 1998.

U.S. Department of Health, Education, and Welfare, Office of Education. (1965). *Higher education act of 1965 section-by-section analysis. Washington, D.C.*

Willett, L. (1989). Are two-year college students first-generation students? *Community College Review*, 17;2, Fall.

| Pseudonym | Year | Race/Ethnicity | Gender | TRiO? |
|-----------|------|----------------|--------|-------|
| Benjamin | Senior | African-American | Male | Yes |
| Ethan | Senior | Biracial (African-American and Caucasian) | Male | Yes |
| Taylor | Recent grad | African-American | Female | Yes |
| Amber | Junior | African-American | Female | Yes |
| Amy | Senior | Caucasian | Female | No |

Figure 1: Demographics of participants.

# Shut Up and Dribble: How Twitter Users Attempt to Mute Athlete Opinion

Monejah Black
Nathaniel Frederick, Ph.D. (Mentor)

## ABSTRACT

Professional athletes have engaged in several methods of activism to show their discontent with President Donald Trump, including forgoing the traditional White House visit for teams who win national championships. This form of protest has headlined the national media, especially since President Trump has personally uninvited players and teams through Twitter. NBA superstars, such as LeBron James, also took to Twitter to attack and criticize the president, resulting in a cascade of tweets from NBA players with disparaging remarks about the president. This research will analyze and categorize Twitter users' replies to these tweets. Results show that most of the tweet replies were negative towards the NBA players and there were six emergent themes: President Trump, stick to sports and athletic ability, agreement, respect/honor, and President Obama. Overall, the analysis of the tweet replies revealed that though athletes are expected to use their platform and influence, they are not always welcome to express their political opinions and if they do, their voices will be minimized, and their characters attacked as a form of discouragement. Through distraction and detraction, athlete opinion is often spun into conversations that are irrelevant and purposeless. It also identifies a need for more intersectionality between race, sports, and politics.

## LITERATURE REVIEW

The excitement of the 2017-2018 National Basketball Association (NBA) season was not limited to only on-court activity such as "poster" dunks, mesmerizing cross-overs, unforgettable highlights, broken records, and team and player rivals. Instead, much of the discord was enacted off the court, where players, coaches, and other members of the NBA family spoke openly, and often negatively, about President Donald Trump. Since his inauguration, leading NBA figures such as LeBron James, Gregg Popovich, Stephen Curry, Kevin Durant, and Steve Kerr have taken to the media and their personal social media accounts to denounce the president.

On February 7, 2017, three-time NBA champion and two-time NBA Most Valuable Player (MVP), Stephen Curry, told a columnist that President Trump could be considered an asset, "if you remove the 'et' from asset" (Ostler, 2017). Curry's comments came after Under Armour CEO Kevin Plank described President Trump as an "asset." Curry, one of the more prominent and highly paid athletes of Under Armour's brand, sharply dispelled the description and suggested that he could disassociate with Under Armour if their "leadership is not in line with [his] core values" (Bieler, 2017). In May 2017, coach Gregg Popovich, a five-time NBA champion who is well-regarded as one of the greatest coaches of all time, described President Trump's conduct as "embarrassing" (Ostler, 2017). This was not the first nor the last time the future Hall of Fame coach expressed his disapproving opinion of the president. When President Trump was first elected in November 2016, Popovich said he was "sick to [his] stomach;" in September 2017, he described the United States as an "embarrassment" and mentioned that President Trump's thinking was "delusional" (Cato, 2017). Jemele Hill, a former ESPN sports journalist tweeted that President Trump is a "white supremacist" in September and was later suspended in October for more "anti-Trump" tweets (Ostler, 2017). Her tweets prompted a large outcry for her firing and caused the president to demand an apology from ESPN.

In other sports leagues, more specifically the National Football League (NFL), the players, owners, and President Trump were involved in a

fierce and controversial conflict concerning the National Anthem protests, where players knelt or stayed in the locker room during the Anthem, throughout the season. The owners and President Trump walked a fine line between demanding players respect the anthem and infringing upon their First Amendment rights and plain racism. On the other hand, players consistently dealt with fans misconstruing their purpose and being accused of disrespect to the country or the military personnel who sacrificed on their behalf.

President Trump, news journalists, political figures, and enraged fans continuously asserted that players who participated in the anthem protest should be fined, suspended, or even dismissed from the sport. On October 8, 2017, Vice President Mike Pence walked out of an Indiana Colts game after players knelt for the anthem. Before kickoff, Pence tweeted that he could not "dignify any event that disrespects our soldiers, our Flag, or our National Anthem" (Press, 2017). Many felt, though, that Pence's walk-out was a political ploy since he knew prior to the game that players would kneel for the anthem (they had been kneeling since the beginning of the season). President Trump later tweeted that the Vice President's trip to the Colts game was "long planned" (Ostler, 2017). A week later, on October 17, 2017, Houston Texans owner Bob McNair referred to NFL players as "inmates" in reference to controlling the anthem protests: "We can't have the inmates running the prison." The peak of the NFL's chaotic season of politics and sport was perhaps the moment when President Trump labeled anthem protesters as "[sons] of [bitches]." At a political rally in Huntsville, Alabama on September 22, 2017, President Trump detailed a scenario where NFL owners removed players who protested the anthem: "Wouldn't you love to see one of the NFL owners, when somebody disrespects our flag, to say 'Get that son of a bitch off the field right now. Out! He's fired!'" This quote rang throughout social media and infuriated many players and fans. The following Sunday, protests rose from four on the previous Sunday to 300, and owners even took the field to show support for their players.

Coincidentally, the climax of the NBA's debacle with politics and sport also transpired within the same weekend. On September 22, Stephen Curry told the media he would not attend the White House visit slated for the Golden State Warriors to celebrate their 2017 NBA Championship. A day later, President Trump tweeted out that Curry's invitation had been withdrawn, initiating a spiral of tweets, discussions, and reactions that altered the relationship between the NBA and President Trump. This research will analyze what Twitter users are saying in response to NBA players who tweet negatively about President Donald Trump.

## METHOD
### Data Collection

The first step of data collection determined which NBA players tweeted negatively in response to President Trump's tweet that disinvited NBA player Stephen Curry to the White House. Tweets from retired or inactive NBA players were not considered. Multiple tweets from one player were not considered; only the first tweet from each eligible player was used. From the NBA players who tweeted negatively about President Trump, only direct replies to the NBA players' tweet were used for the content analysis (no quoted tweets, retweets etc.). The first 100 available replies to each NBA players' tweets were collected and coded to determine whether the content was in support of or critical of the athlete or his tweet, and also to identify any themes present. In total, 400 tweets from four NBA players (Bradley Beal, Chris Paul, Draymond Green, and LeBron James) met these criterions and were collected and analyzed.

### Data Analysis

To determine whether a reply was in support of or critical of the original tweet and what themes were present in responses to NBA players who tweeted negatively about President Donald Trump, a content analysis was conducted, with each tweet serving as the unit of analysis. First, the replies were reviewed to examine whether the tweet maintained a positive or negative connotation. Also, any immediately identifiable themes were created into inductively derived categories. After the initial review of

tweets, the tweets were once again reviewed and placed into categories that accurately described the overall theme of the tweet. Any newly identified categories were also established.

## RESULTS & INTERPRETATION

Analysis revealed that six emergent themes were discussed in the replies to NBA players who tweeted negatively about President Donald Trump: (a) President Trump, (b) stick to sports and athletic ability, (c) agreement, (d) respect/honor, and (f) President Obama. Each emergent theme will now be discussed with examples drawn from the data. All examples are taken verbatim as they appeared in the data; spelling and grammatical errors were left intact.

### President Trump

Within both negative and positive replies, President Trump was often referred to in discussion about the conflict about NBA players visiting the White House. Positive replies primarily stood in agreement with President Trump or reiterated his authority or position as president. For example, in response to NBA player Chris Paul telling President Trump to "#StayInYoLane," one tweeter said "He's the president of the United States. Pretty sure he's in his lane when he's telling people to respect this country. #StayInYourLane." This stance concedes with the President because of his position. Other comments that mentioned President Trump were derogatory and in support of the NBA player's original tweet, often making jokes or otherwise criticizing President Trump. In reply to the same Chris Paul tweet, one user said, "Trumpty Dumpty has no lane...he is a chaos maker, devoid of policy, devoid of common sense and human decency." This user employs a negative twist on Trump's name and further attacks his character and ability as a president. These two themes are common throughout the replies and illustrate how users use President Trump to support or criticize the players' attitude expressed in their tweets.

### Stick to Sports and Athletic Ability

Of the content that was tweeted with a negative connotation, "stick to sports" or some variation of this theme was used most to derail players from voicing their opinion on political matters. In essence, tweeters implied that because NBA players are merely athletes, they don't have the range or right to speak on subjects other than sports. A response to NBA player LeBron James read, "You are the BUM James. Trump has already done more good for the black man than their so called brother ( OBUMA ) did in eight years. Play ball and leave the politics to people who know what they are doing." This was especially mentioned if players had shortcomings within their respective careers. In response to NBA player Draymond Green, a tweet said, "Heard that. I'm still wondering how y'all blew that 3-1 lead with a unanimous MVP smh," in reference to the Golden State Warriors' loss in the 2016 NBA Finals, after a historic 73-9 regular season, led by the first ever unanimous league MVP Stephen Curry. Again, the idea that athletes are strictly athletes and do not have the intellectual capability to understand or comment on politics is persistent throughout all replies to the players.

### Agreement

Many variations of agreement with the players' comment were present throughout the replies. Examples include simple statements like "Amen" and "Exactly" or more in depth support like "You are a great person! No need to defend yourself.. we all love you" in reply to LeBron James or "We all are Draymond, we all are! #idiotPOTUS." By simply agreeing with the players' comments, Twitter users showed their support and solidarity with the players against the President.

### Respect/Honor

Respect and/or honor was a popular subject when tweeters attempted to minimize the value of the NBA players' thoughts. By insinuating that players were being disrespectful to the president, the country, the troops, the anthem, etc., the main idea transitions from President Trump's antics to athletes' lack of respect for America. "Because it's his job to defend this while athletes disrespect it" is an example of this theme. This ploy has been consistent throughout athletes of all sports methods of protest. Whether by kneeling during the anthem or making political statements, a common response is to accuse the player of being disrespectful. This breeds an underlying tone of ungratefulness on the players' part;

instead of disrespecting the institutions that have granted them this opportunity, they should remain silent and appreciative of their circumstances. It's as if criticism of the government has always been uncommon and abominable.

**President Obama**

Mention of President Obama was almost exclusively limited to discussing his faults during his term and disapproval of his presidency in comparison to President Trump. In attempt to detract from the topic at hand, tweeters would name drop President Obama in a "but what about Obama" or "what if this was Obama" fashion. In response to LeBron James, a tweeter wrote, "Lost so much respect for you. Had I called Obama a "bum" I would be called a racist. Didn't like Obama, but respected him as POTUS. #MAGA." President Obama has nothing to do with this situation, yet tweeters used his name to create a comparison between him and President Trump. It served no real purpose, since it didn't change the circumstances of the original topic nor provide any further relevant insight.

**DISCUSSION**

This research analyzed what themes were present in response to NBA players who tweeted negatively about President Donald Trump and whether the responses were more critical or supportive in nature. The results of the data provide several implications for athletes and social activism. First, it's increasingly clear that social activism and political opinion are not always welcome from athletes. Even before the saga with President Trump and the NBA, players from other leagues, namely the NFL, struggled to find their place in the world of activism as an athlete. They were criticized for their method of protest and minimized for their lack of formal political backgrounds. After the analysis of this data, these limitations still exist (stick to sports). Athletes are not granted access to be politically expressive because of their role as athletes. Secondly, even if they choose to work past these limitations, their voices will be distracted and detracted from. By any means necessary, attempts will always be made to change the nature of the conversation (President Obama,

respect/honor). By continually bringing other topics to the forefront, the initial issues are disparaged and nearly lost in translation. However, aside from all the discord and confusion that surrounds athletes' opinions, it's still clear that they are expected to use their platform to advocate for causes. *Which* causes continues to be a fiery debate, but nonetheless, athletes are held to some degree of social responsibility. Whether it's to show respect and cordiality with government and political authority, or to make statements by kneeling and passing up White House visits, athletes are expected to use their influence. The last implication of this research makes room for further research. The intersectionality of race, politics, and sports remains a prominent yet delicate subject. There is no true safe space for athletes to express their opinions on certain subjects that affect them and the communities they represent. However, this is critical to the progression of society and the integral changes for more equity and equality.

**LIMITATIONS**

There were some limitations in this research regarding the use of the Twitter app. For one, the search filters were limited, so not all tweeted replies were available for analysis. Secondly, in collecting the first 100 tweets available, the Twitter algorithm had effects on what tweets were available at certain times (most recent or most popular tweets versus initial reaction tweets).

**CONCLUSION**

This research provided preliminary insight on attitudes and opinions towards athletes who use their platform to advocate for social activism. In general, tweets were more critical than supportive and attempted to distract from the issue at hand. It hints at the prevailing stigma around sports and politics. In the future, research could focus on why certain themes are prevalent and why tweeters feel it is appropriate to give certain responses.

# REFERENCES

Agyemang, K. J. (2011). Black male athlete activism and the link to Michael Jordan: A transformational leadership and social cognitive theory analysis. *International Review for the Sociology of Sport*, 47(4), 433-445. doi: 10.1177/1012690211399509

Bieler, D. (2017, February 08). Steph Curry bluntly disagrees with Under Armour CEO calling Trump an 'asset'. Retrieved June 11, 2018, from https://www.washingtonpost.com/news/early-lead/wp/2017/02/08/steph-curry-bluntly-disagrees-with-under-armour-ceo-calling-trump-an-asset/?noredirect=on&utm_term=.6e37089030c9

Brock, A. (2012). From the blackhand side: Twitter as a cultural conversation. *Journal of Broadcasting & Electronic Media*, 56(4), 529-549. doi: 10.1080/0883815120127322147

Cassilo D. & Coombs, D.S. (2017). Athletes and/or activists: Lebron James and black lives matter. *Journal of Sport and Social Issues*, 41(5), 425-444. doi: 10.1177/0193723517719665

Cato, T. (2017, September 25). Everything Gregg Popovich said about President Trump and racism at Spurs media day. Retrieved June 11, 2018, from https://www.sbnation.com/nba/2017/9/25/16362298/gregg-popovich-spurs-trump-comments-racism-president-nba

Cooper, J. N., Macaulay C., & Rodriguez S. H. (2017). Race and resistance: A typology of african american sport activism. *International Review for the Sociology of Sport*, 1-31. doi: 10.1177/1012690217718170

Cramer, L. M. (2018). Postracism mythology: NBA commissioner Adam Silver's "heroic" banishment of racism from the NBA. *Journal of Communication & Sport*, 1-21. doi: 10.1177/2167479518769895

Ferrari, E. (2017). Fake accounts, real activism: Political faking and user-generated satire as activist intervention. *New Media & Society*, 1-16. doi: 10.1177/1461444817731918

Gift, T. & Miner, A. (2017). Dropping the ball: The understudied nexus of sports and politics. *Journal of World Affairs,* 180(1), 127-161. doi: 10.1177/0043820017715569

Kassing, J.W. & Sanderson, J. (2010). Fan-athlete interaction and twitter tweeting through the giro: A case study. *International Journal of Sport Communication*, 3(1), 113-128. doi: 10.1123…

Kassing, J.W. & Sanderson, J. (2012). Playing in the new media game or riding the virtual bench: Confirming and disconfirming membership in the community of sport. *Journal of Sport and Social Issues*, 39(1), 3-18. doi: 10.1177/0193723512458931

Kaufman, P. (2008). Boos, bans, and other backlash: The consequences of being an activist athlete. *Journal of Humanity & Society*, 32(3), 215-237. doi: 10.1177/016059760803200302

Kaufman, P. & Wolff, E. A. (2010). Playing and protesting: Sport as a vehicle for social change. *Journal of Sport and Social Issues*, 34(2), 154-175. doi: 10.1177/0193723509360218

Lavelle, K. L. (2015). No room for racism: Restoration of order in the NBA. *Journal of Communication & Sport*, 4(4), 424-441. doi: 10.1177/2167479515584046

Ostler, S. (2017, December 31). 2017: Athletes didn't stick to sports, politicians didn't stick to politics. Retrieved June 11, 2018, from https://www.sfchronicle.com/sports/ostler/article/2017-Athletes-didn-t-stick-to-sports-12463992.php

Press, A. (2017, October 09). Trump: Pence's attendance at Colts game was 'long planned'. Retrieved June 11, 2018, from http://www.latimes.com/politics/la-pol-updates-trump-tweets-mike-pence-colts-htmlstory.html

Sanderson, J. & Schmittel A. (2014). Talking about Trayvon Martin in 140 characters: Exploring NFL players' tweets about the George Zimmerman verdict. *Journal of Sport and Social Issues*, 39(4), 332-345. doi: 10.1177/0193723514557821

Tucker, L. (2003). Blackballed: Basketball and representation of the black male athlete. *American Behavioral Scientist*, 47(3), 306-328. doi: 10.1177/000274642032561

# The Impact of Long-Term Travel on the Socio-Political Consciousness of South Carolina Students

Sierra Davis
Wendy Sellers, Ph.D. (Mentor)

## ABSTRACT

This pilot study's driving force is to contribute to the student travel and study abroad literature and provide insight for social workers interested in practice on the global level. Social Work practice strongly emphasizes the importance of continuing education. On the macro level, advocacy and knowledge of policy can inform actions taken in the field. Literature surrounding study abroad among students typically focuses on cultural and educational impact, with little broad research focus on how study abroad experiences impact global awareness. The United Nations created a list of goals, known as the Sustainable Development Goals, aimed towards the rectification of pressing issues around the globe by the year 2030. The Sustainable Development Goals cover a broad range of targets, with its first being the lofty task of eradicating poverty, while others focus on the protection of biodiversity in forests and oceans. A common theme found in information surrounding the goals is how vital the spread of information is, whether it be at the local or political level. Before an acceptable level of sustainability is reached, citizens and governments must be aware of it. Some of the Sustainable Development Goals were used to create a new framework for gauging the effect travel has on knowledge of global issues. Data was collected from college-level students around South Carolina via an online survey. Questions within the survey were sorted into the scales named after the three overarching targets of the Sustainable Development Goals: ending poverty, ensuring prosperity for all, and protecting the planet. Results found that though most students who traveled had strong opinions about world issues, demographics and field of study were more likely to predict differences in opinion.

## LITERATURE REVIEW

This report will review the literature surrounding study abroad, its impact on students, how the duration of trips influence completion of program-related goals, and where the available literature on study abroad falls short of offering a comprehensive overview of the subject.

### Overview of Study Abroad and its Parameters

Studying abroad is a popular practice among higher education institutions around the world. On a study abroad trip, students are sent to study at high schools or universities in a foreign country. American universities offer a variety of options for study abroad, but they are typically separated by length. Short-term study abroad can mean faculty-led trips lasting a few weeks or even up to a month, or a study abroad trip limited to one summer. Semester programs can be half of an academic year, or an entire academic year. With an increasing interest in globalization sending American students abroad, universities and scholarship databases have streamlined ways to access funding. There are several scholarships available to cover the costs for students from all backgrounds--for example, the Benjamin A. Gilman award for Pell Grant recipients, and the Fullbright, for anyone that qualifies--to choose from. Some universities have partnerships with foreign institutions that allow students to use their financial aid reward to cover their tuition at their host schools (Study.com).

Because costs are consistently an issue for most students even with financial aid, short-term study abroad trips have become more popular among American students. By the academic year of 2001-2002, the popularity of short-term programs rose from 38% (Chieffo, Griffiths, 2004) to 49% of all programs (Dwyer, 2004). In the 2009-2010 academic school year,

57% of American students studying abroad were participating in short-term programs. Engle and Engle (2004) report that most short-term study abroad programs are structured in a way that provides comfort for American students, decreasing the likelihood of changes in behavior and attitudes. Ingram and Peterson (2004) found that longer stays tended to generate stronger positive results; but Dwyer (2004), Engle, and Engle (2004) have both found that short-term programs with well-defined academic and cultural goals beget results that are just as positive as long-term study abroad trips. Engle and Engle's study was unique in that it introduced a language component and was focused on a cohort of students in a single program who were required to speak intermediate French in their stay. This study bookends the importance of short-term programs with clearly defined goals as opposed to short-term programs meant for leisure.

### Localized Studies

Much of the literature about study abroad's impact is school or program specific. Chieffo and Griffith's study (2004) is limited to University of Delaware students who studied abroad from the years 2003-2004. The Engles' study was confined to students in the AUCP program with at least an intermediate grasp on the French language (2004). One study (Bell, et al.) was confined to three nations in the South Pacific ocean—Australia, New Zealand, and Fiji—and followed a cohort of just 150 students. Each student in Bell's study was given four open-ended questions to answer: 1) 'What did you learn about the country that you visited?' (2) 'What did you learn about yourself as an American?' (3) 'How have your perspectives on the world changed?' and (4) 'Please take the opportunity to add anything further.' Their responses, while valuable, are difficult to objectively quantify. The students reported a better understanding of environmental issues, as the three host-nations are heavily reliant on tourism and agriculture and thus more willing to care for their environment (2016). While research that is specific to schools and programs is valuable and can be generalized to larger populations, variations in region and program design make it difficult to completely extrapolate data earned from them.

### Impact on Personal Growth

Though the literature surrounding study abroad showcases benefits for trips of all durations, long-term study abroad tends to be more positive, even in relation to short-term trips with clear structures. Dwyer (2004) found that full-year students were twice as likely to cultivate long-lasting friendships with citizens from their host countries, and were more willing to learn different languages. Ingraham and Peterson (2004) reported that study abroad students felt increases in maturity and self-confidence, and a willingness to consider the world from a more open perspective. Study abroad students were reported to feel more patience towards those who spoke English as a second language, and had a growing interest in critically analyzing their own politics (Dwyer 2004).

### Impact on Global Awareness

Research suggests that studying abroad can have a significant impact on raising the global consciousness of students. Bell's study, for example, had students visiting countries with different sources of economic security than the United States. These nations placed heavy emphasis on environmental protections and recycling, which many of the students remarked on in their answers (2014). One student remarked that "[Americans] do not place enough importance on reducing the United States' ecological footprint; Americans are not conscious enough of the consequences of wasteful lifestyles" (2014), echoing the sentiment of many in their cohort. Much of the recent literature surrounding study abroad focuses on region-specific issues[SD1] , and is more likely to provide data on specific global issues. There exists, however, a gap in the literature concerning a wide breadth of issues impacting the United States and the world.

### United Nations Development Goals

This study aims to categorize a list of issues outlined by the United Nations and to use a theoretical framework to quantify the socio-political consciousness of South Carolina college students. The United Nation's seventeen Sustainable Development Goals are focused on three key issues—poverty, protection of the

planet, and ensuring the prosperity of all citizens. The seventeen goals range from poverty to healthcare, to infrastructure and environment-friendly actions, to social justice in a number of categories. The Sustainable Development Goals described below were used in the creation of a new framework for gauging the effect travel has on knowledge of global issues. Goal nine, which focuses on infrastructure; goal sixteen, which focuses on peace resolution; and goal seventeen, which focuses on partnerships for the achievement of the goals, were not included in the creation of the framework.

### Poverty

Under poverty, the United Nations lists goals one and two: ending poverty and ending world hunger, respectively. Extreme poverty exists in the United States and around the world, especially in areas with more developing countries like Sub-Saharan Africa and South East Asia. Social protection programs provide the most crucial support for these issues, which is key for the disabled, who are disproportionately at risk of suffering from poverty and starvation. The United Nations hopes to introduce sustainable food systems and maintain the genetic diversity of agriculture in the area (Sustainable Development Goals).

### Prosperity of All Citizens

Under healthcare, the United Nations lists goals three, four, five, seven, eight, ten, and eleven. These goals are good health and well-being, quality education, gender equality, creating affordable and clean energy, fostering decent work and economic growth, and creating sustainable cities and communities. Children are consistently vulnerable groups, as well as young mothers. Infectious diseases are rampant in poor areas, which are disproportionately filled with young women and their children. Health systems require funding to educate new generations of doctors and serve a growing population in developing countries. Inequalities exist in all walks of life in the United States and abroad, and cover issues ranging from education to housing to the workplaces. These inequalities are typically race, class, and gender. The United Nations hopes to urge nations to work towards closing these disparities.

### Protection of the Planet

Under protection of the planet, the United Nations lists goals six, twelve, thirteen, fourteen, and fifteen. These issues are clean water and sanitation, responsible consumption and production, climate action, protection of life below water, and protection of life on land. Developed nations around the world are consistently creating waste and pollution. Agricultural programs and corporations waste food that could be readily distributed or composted, and sea life is at danger of many of wastes aside from food. The United Nations hopes to introduce more sustainable habits in developed countries and distribute aid to underdeveloped countries impacted by these issues.

### Connection to Study Abroad and Social Work Practice

These goals listed by the United Nations are important because the level with which they impact different nations varies. Students who study abroad or travel to different nations around the world will be exposed to different versions of each of these issues. For Social Work students and licensed social workers, it is important to factor in environmental issues that cross borders and impact the lives of clients. The goal of this study is to see if there is a possible way to objectively quantify how experience in foreign countries impacts the consciousness of students who may have been exposed to them.

### METHODS

The purpose of this study is to use a new framework to gauge how study or travel abroad impacts students' attitudes on a variety of issues impacting both the United States and the world. There are many published studies surrounding how study abroad impacts the personal growth of students and their thoughts on environmentalism, but there has not been a framework that gauges their thoughts on a wide range of global issues. This pilot study used the United Nations' seventeen Sustainable Development Goals as a framework to quantify information about student attitudes. The data was collected via a quantitative Qualtrics survey. The survey, titled "Attitudes on Sustainable Development," was distributed in a variety of

ways. It was shared on social media, it was distributed to Winthrop University students via an email announcement system, and the survey was sent to eleven study abroad coordinators from universities around South Carolina. Because this is a small-scale pilot study, the participant pool was restricted to South Carolina college students aged eighteen and up. Once collected, data was stored in a password protected USB drive and a password protected storage service online. It was analyzed using the SPSS statistics analysis software. Through analysis and SPSS, three scales were created: the poverty scale, the earth scale, and the ensuring prosperity scale. In quantitative scales ranging from one to four, where one was strongly disagree and four was strongly agree, attitudes on questions within these scales were used to determine significance among groups.

### Structure of the Survey

The survey, based on the United Nations' Sustainable Development Goals, was broken up into four parts: Study Abroad, Global Issues, Sustainable Development, and Demographics. In total, the survey had forty-seven items. Part one asked students about their travel experiences. If participants had not traveled, they were forwarded to part two of the survey. Participants who had travel experience were asked about location, timing, and reasons for their stay. Part two asked students questions about their thoughts on issues at the community scale and the global scale. The purpose of asking participants their thoughts on issues in the United States and abroad was to gauge if there was any difference in relevance to individuals, especially in relation to experience with travel. Part three asked students their thoughts on environmental and human rights issues. Like part two, the issues in this section impact both the United States and other nations. However, participants were not asked to compare impact on scales, because responses to this would be used to bolster comparisons between groups. Finally, part four asked participants to share information about their demographics. Demographics were used to categorize data based on different variables in this section--age group, gender identity, race or ethnicity, and major. These were compared for data analysis and visualization of data.

### RESULTS & DISCUSSION

For this pilot study, three research questions were created:

1.) Does study or travel abroad impact the socio-political consciousness of South Carolina students?
2.) Will the responses of students vary across demographics?
3.) Will the responses of students vary across majors and disciplines?

Research affirmed the impact of study abroad and showed variability in responses based on demographics and major. There were fifty-seven participants in total, and thirty-nine surveys were completed. Completed surveys were used to create the figures shown below.

Of this sample, women felt more strongly about poverty and ensuring prosperity than men (Figure 3). There was a positive correlation between the number of times traveled outside of the United States and importance of being aware of gender inequality: $r = .355$, $p < .05$. There was a negative correlation between age and the impact of war: $r = -.334$, $p < .05$. There was a negative correlation between age and the impact of racism: $r = -.428$, $p < .01$. Younger participants (ages 18-24) were more likely to have increased awareness of the impact of poverty, war, and racism.
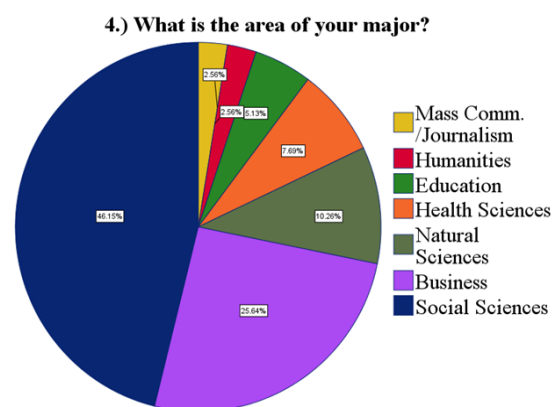


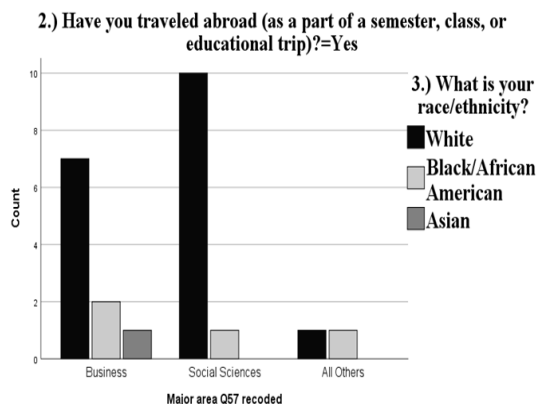Figure 1: Breakdown of participants' areas of study.

2.) Have you traveled abroad (as a part of a semester, class, or educational trip)?=Yes

3.) What is your race/ethnicity?
- White
- Black/African American
- Asian

**Figure 2: Comparison of participants' race and area of study with international travel**

| Group Statistics | | | | | |
|---|---|---|---|---|---|
| | 2.) What is your gender? | N | Mean | Std. Deviation | Std. Error Mean |
| Poverty Scale Average | Male | 4 | 3.5500 | .59722 | .29861 |
| | Female | 33 | 4.0364 | .45402 | .07904 |
| Earth Scale Average | Male | 4 | 4.2143 | .24744 | .12372 |
| | Female | 33 | 4.2078 | .31154 | .05423 |
| Ensuring Prosperity Scale Average | Male | 4 | 3.9500 | .12910 | .06455 |
| | Female | 33 | 4.4091 | .40494 | .07049 |

| | | Levene's Test for Equality of Variances | | | | | |
|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference |
| I learned about global issues while studying/traveling abroad. | Equal variances assumed | 3.788 | .062 | 2.118 | 28 | .043 | .917 |
| | Equal variances not assumed | | | 1.573 | 5.953 | .167 | .917 |
| I have learned about sustainable development while studying/traveling abroad | Equal variances assumed | .367 | .550 | 2.877 | 26 | .008 | 1.626 |
| | Equal variances not assumed | | | 2.979 | 6.099 | .024 | 1.626 |

**Figure 3: Participants' responses to questions concerning knowledge of world issues and sustainable development while abroad. Most respondents' answers were approaching significance.**

It is important to note that the bulk of respondents were women, white, and majoring in the areas of social sciences. Of this sample, white participants were more likely to have studied abroad, but this may be the result of the skew towards white participants in the overall pool of respondents. All participants who completed this survey lingered in the "agree" area of each scale, and though students who had travelled held more extreme opinions, there were no significant differences between students who had and had not traveled. Because most people who responded to these surveys are studying either Business or the Social Sciences, it is possible that the education that they have been receiving influenced their opinions. These fields have been increasingly stressing the importance of globalization in the past few years as social media and communication between networks becomes more sophisticated. Similarly, these two disciplines tended to echo each other in responses to different survey questions. Further research must explore, within a wider group, the intersectionality of race, gender, and major on attitudes towards the issues in this survey.

## REFERENCES

Bell, H. L., Gibson, H. J., Tarrant, M. A., Perry, L. G., III, & Stoner, L. (2016). *Transformational learning through study abroad: US students' reflections on learning about sustainability in the South Pacific* [Scholarly project]. In *Taylor and Francis Online*. Retrieved May 24, 2018, from https://www.tandfonline.com/doi/abs/10.1080/02614367.2014.962585?journalCode=rlst20

Chieffo, L., & Griffiths, L. (2004). *165 Large-Scale Assessment of Student Attitudes after a Short-Term Study Abroad Program* [Scholarly project]. In *Education Resources Information Center*. Retrieved May 24, 2018, from https://files.eric.ed.gov/fulltext/EJ891455.pdf

Dwyer, M. M. (2004). *151 More Is Better: The Impact of Study Abroad Program Duration* [Scholarly project]. In *Education Resources Information Center*. Retrieved May 22, 2018, from https://files.eric.ed.gov/fulltext/EJ891454.pdf

Engle, L., & Engle, J. (2004). *Assessing Language Acquisition and Intercultural Sensitivity Development in Relation to Study Abroad Program Design* [Scholarly project]. In *Education Resources Information Center*. Retrieved May 24, 2018, from https://files.eric.ed.gov/fulltext/EJ891458.pdf

Ingraham, E. C., & Peterson, D. L. (2004). *Assessing the Impact of Study Abroad on Student Learning at Michigan State University* [Scholarly project]. In *Education Resources Information Center*. Retrieved May 21, 2018, from https://files.eric.ed.gov/fulltext/EJ891450.pdf

Sustainable Development Goals. (n.d.). Retrieved May 20, 2018, from http://www.un.org/sustainabledevelopment/sustainable-development-goals/

What is Study Abroad? (n.d.). Retrieved May 25, 2018, from https://study.com/academy/lesson/what-is-study-abroad-definition-benefits.html

# The Impact of Generalized Anxiety Disorder on Academic Performance in Undergraduate Students Following a Brief Guided Meditation

Ali Maclay
Courtney H. Guenther, Ph.D. (Mentor)

## ABSTRACT

Many undergraduate college students report high levels of anxiety, which can negatively impact their academic performance. Meditation is currently being explored as a method to reduce anxiety, with the duration and frequency under investigation to optimize outcomes. Therefore, this pilot study examined whether the severity of generalized anxiety disorder affected the influence of a brief, one-time, guided meditation on undergraduate academic performance. This study also investigated student perceptions of meditation and test anxiety. Students completed the GAD-7 to assess levels of anxiety, participated in a brief meditation, completed a lab quiz, and evaluated their meditation experience through a post-survey. We hypothesized that students with high GAD scores would perform similarly to those with low GAD scores on a quiz following a brief meditation. We also hypothesized that students with a more positive view of meditation would score higher on the quiz compared to those who did not find the meditation to be helpful. There was no significant difference in quiz scores based on anxiety level. Students who reported that the meditation reduced test anxiety and students who reported that they do not experience test anxiety tended to score better on the lab quiz. Even though there was not a statistically significant correlation between lab quiz scores and GAD-7 scores, there does appear to be a strong trend: as GAD-7 scores increase (higher anxiety), lab quiz scores decrease. This pilot study provides the foundation for future research exploring brief meditation on test anxiety in undergraduate students.

## LITERATURE REVIEW

Generalized Anxiety Disorder (GAD) is characterized by excessive, multifocal, and persistent worry or anxiety that interferes with daily activities and is difficult to control (Stein et al., 2015). According to the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition, the criteria for GAD diagnosis requires excessive anxiety and worry to have occurred more days than not for at least 6 months. In the United States, the estimated prevalence of GAD in the general population is approximately 3% (Patel and Fancher, 2013). The age of onset for GAD is variable, and it is nearly twice as prevalent in females as males (Stein et al., 2015). Because GAD is one of the most prevalent anxiety disorders, Spitzer et al. (2006) developed a brief self-report scale known as the GAD-7 in order to identify probable cases of GAD. Researchers have validated GAD-7 for screening in clinical practice and research (Spitzer et al., 2006) and in the general population (Löwe et al., 2008). Therefore, the GAD-7 was used to measure severity of anxiety in our population of undergraduate students.

It is well documented that college students face many challenges and stress during their academic career, with 56.9% of college students reporting "overwhelming anxiety" and 21.9% stating that anxiety had a negative impact on their academics (Bamber and Schneider, 2016). In particular, test anxiety is a significant source of stress for students.

Test anxiety involves "significant emotional, physiological, and cognitive reactions to evaluative situations that can negatively impact both students' psychological well-being and scholastic performance" (Rajiah et. al 2014). The prevalence is estimated to be as much as 35% among college students, and test anxiety has been linked to lower academic performance (Hjeltnes et al., 2015). If left untreated, test anxiety may

lead to "poor academic performance, pessimistic attitude about the future, low self-confidence, and amotivation" (Rajiah et al., 2014).

One of the fastest growing ways to address anxiety issues in academia is by introducing meditation. Meditation is a "mental practice based on focusing on the sensations of the breath/body while maintaining a relaxed state of mind" (Zeidan et al., 2010). People who have undergone short-term meditation training have shown improvements on cognitive performance and mood (Zeidan et al., 2010). Several studies have shown that meditation can actually alter brain structure and function. For example, long-term meditators have increased activation on fMRI in brain areas related to monitoring and attention (Davidson et al., 2008). Therefore, mindfulness meditation programs are being developed and studied in order to encourage neuroplasticity that may help reduce anxiety. One commonly used program is Mindfulness-Based Stress Reduction (MBSR), which trains individuals in mindfulness through eight 2-hour weekly sessions (Kabat-Zinn, 1990). MBSR has been demonstrated to reduce anxiety in GAD patients and improve stress reactivity and coping compared to an active control group (Hoge et al., 2013). Within academia, MBSR helped students cope with test anxiety as well as find an inner source of calm, stay focused in learning situations, move from fear to curiosity in academics, and feel more self-acceptance when facing difficult situations (Hjeltnes et al., 2015). Even a shorter (5-week) MBSR program led to increased measures of psychological well-being and self-compassion in undergraduate students (Bergen-Cico et al., 2013).

Although there is compelling evidence that mindfulness programs may reduce anxiety, the time commitment involved for program completion may prevent undergraduates from participating fully. Therefore, researchers are exploring the duration and frequency of meditation to optimize outcomes and accommodate students' academic schedules. A few are starting to explore the immediate effects of a one-time, brief meditation on undergraduate students, but they are producing mixed results (Bamber and Schneider, 2016; Saoji et al., 2017). We are interested in contributing to this area of active research. Therefore, the current pilot study addresses whether the severity of GAD affects the influence of a brief, one-time, guided meditation on undergraduate academic performance.

The current study also investigates undergraduate students' perception of meditation and test anxiety. A study by Gryffin et al. (2014) surveyed college students about their interest and understanding of meditation. The goal of the study was to identify potential barriers to meditation practice and suggest opportunities for promoting meditation in college students. In particular, 45% of students reported time as a major barrier to meditation practice and corresponding suggestions were made to try brief (5 minute) meditation sessions a few times a day in response. Additionally, 86% of students reported calmness/relaxation/stress reduction as a perceived benefit of meditation, which only addresses one aspect of meditation outcomes. Our current pilot study posed similar questions in a post-survey on perceptions of meditation and test anxiety to help contribute to this growing body of research.

Because of the success of MBSR and other meditation programs on reducing anxiety, we hypothesized that students with high GAD scores would perform similarly to those with low GAD scores on a quiz following a brief meditation. We also hypothesized that students with a more positive view of meditation would score higher on a quiz compared to those who did not find the meditation to be helpful.

## METHODS
### Participants

This study was reviewed by Winthrop University's Institutional Review Board and received exemption status. The participants were undergraduate students recruited from an Anatomy and Physiology course (n=24). Two students did not attend class the day of the study. All other students participated in the study after providing informed consent (n=22). All but one student who participated in the study completed the post-survey (n=21).

### Procedure

The study was announced one week prior to a regularly scheduled lab. On the day of

the study, students who provided informed consent (n=22) completed a 7 question anxiety survey known as the GAD-7 (Spitzer et al., 2006) to assess levels of anxiety prior to a lab quiz on cranial nerves. Students then participated in a 3-minute guided breathing meditation (written permission from the author obtained, Appendix A) played as an audio recording through the application Insight Timer (Insight Network Inc.). Students completed a 12 question matching lab quiz on cranial nerves. Once the lab quiz was submitted, students (n=21) completed a post-survey (Qualtrics, Provo, UT, and Seattle, WA) containing 10 Likert scale questions and 2 short responses regarding their meditation experience (Appendix B).

All students who provided informed consent were assigned an ID number generated through a random number tool in Microsoft Excel 2016 (Microsoft Corporation, Redmond, WA). This ID number was used on all assessment data, including the GAD-7, lab quiz, and post-survey, which allowed the comparison of data across measures while keeping student information confidential. After participation in the study was completed, students were informed that the lab quiz counted as bonus points toward the next lecture test.

### Data Analysis

The GAD-7 survey was scored as follows: 0-4 indicates minimal anxiety, 5-9 mild, 10-14 moderate, and 15-21 severe (Spitzer et al., 2006 and Löwe et al., 2008). Data were analyzed using Microsoft Excel 2016 (Microsoft Corporation, Redmond, WA), SPSS Statistics (IBM, Armonk, NY), and Qualtrics (Qualtrics, Provo, UT, and Seattle, WA). A one-way ANOVA compared the average quiz grade based on the severity of GAD where p < 0.05 was considered significant. A Pearson correlation compared responses to survey prompts based on GAD severity where p < 0.05 was considered significant. All values were reported as a mean ± standard deviation.

## RESULTS
### Participants

Of the 22 participants in our study, 22.73% were categorized as minimal GAD severity (average GAD-7 of 2.8), 50% were mild (average GAD-7 score of 6.36), 22.73% were moderate (average GAD-7 score of 13), and 4.55% were severe (average GAD-7 score of 16). Because only one participant was categorized as severe, a moderate/severe group was formed combining those who scored higher than a 10 on the GAD-7, which was a cutoff used in previous studies to indicate potential cases of GAD (Spitzer et al., 2006 and Löwe et al., 2008). Therefore, of the 22 participants in our study, 27.27% were moderate/severe (average GAD-7 score of 13.5).

### Lab Quiz Results

The class average for the lab quiz completed post-meditation was 74.62% ± 23.21. The range was 25%-100%. The average lab quiz grade was 73.33% ± 27.89 for students with minimal GAD severity, 82.58% ± 16.01 for students with mild GAD, and 61.11% ± 27.72 for students with moderate/severe GAD (Figure 1). There was no statistically significant difference in lab quiz scores based on GAD severity, $F(2,19) = 1.80$, $p = .19$. There was also no statistically significant correlation between lab quiz scores and GAD-7 scores, $r(20) = -.32$, $p = .15$.

### Survey Results

21 participants completed a post-quiz survey regarding their meditation experience. 10 Likert scale questions were analyzed by examining the correlation between each survey prompt and GAD-7 scores. There was no statistically significant difference between GAD score and survey results ($p > 0.05$, Tables 1 and 2). Each survey prompt was also correlated with lab quiz scores. For the two prompts, a significant correlation was found (Tables 1 and 2). There was a positive correlation between lab quiz score and the prompt, *The guided meditation reduced my test anxiety* ($p = .002$, Table 1). There was also a positive correlation between lab quiz score and the prompt, *I do not experience test anxiety* ($p = .037$, Table 1).
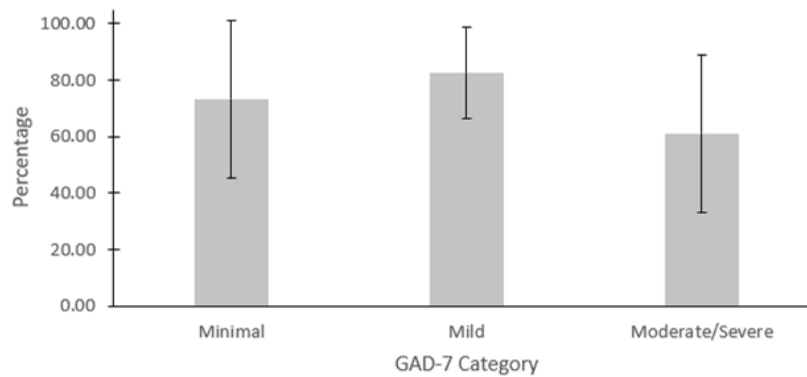
**Figure 1. Average Quiz Score Following Meditation Based on Severity of GAD.** Students were categorized into three levels of GAD severity based on the GAD-7 score. There was no statistically significant difference in quiz scores based on GAD severity, $F(2,19) = 1.80, p = .19$.

| Survey Prompt | Mean (SD) | r<br>GAD-7 score | r<br>Lab quiz score |
|---|---|---|---|
| I felt calm during the meditation. | 4.00 (1.10) | -.12 | .14 |
| I did not enjoy the guided meditation. | 2.10 (0.77) | .07 | -.08 |
| I would like to regularly participate in meditation in the classroom. | 3.29 (0.78) | -.02 | .36 |
| Regularly participating in meditation in the classroom would not reduce my test anxiety. | 2.86 (0.96) | .07 | -.26 |
| The guided meditation reduced my test anxiety. | 3.19 (0.81) | -.07 | .65** |
| I do not experience test anxiety. | 2.38 (0.92) | -.13 | .46* |
| The guided meditation did not help me feel more focused for my quiz. | 2.67 (0.97) | .28 | -.31 |
| I would prefer meditation in the classroom over meditation on my own. | 2.62 (0.87) | -.11 | -.02 |

**Table 1. Correlation Analysis of Student Responses to Meditation.** Pearson correlations were analyzed between student responses to survey prompts and 1) GAD-7 score and 2) lab quiz score. Responses to survey prompts were rated on a scale of 1-5 (1 = strongly disagree, 2 = disagree, 3 = neither disagree or agree, 4 = agree, 5 = strongly agree). * indicates $p < .05$ and ** indicates $p < .01$.

| Survey Prompt | Mean (SD) | r<br>GAD-7 score | r<br>Lab quiz score |
|---|---|---|---|
| What is your understanding of meditation? | 3.29 (0.72) | .01 | .24 |
| What is your experience in practicing meditation? | 2.38 (0.74) | .08 | .17 |

**Table 2. Correlation Analysis of Student Knowledge of Meditation.** Pearson correlations were analyzed between student responses to survey prompts and 1) GAD-7 score and 2) lab quiz score. Responses to survey prompts were rated on a scale of 1-5 (1 = none, 2 = a little, 3 = moderate, 4 = high, 5 = professional). There were no statistically significant correlations, $p > .05$.

## DISCUSSION

This pilot study addressed whether the severity of generalized anxiety disorder (GAD) affects the influence of a brief, one-time, guided meditation on undergraduate academic performance and student perceptions of meditation and anxiety. Anxiety can negatively impact academic performance and therefore, meditation is being actively explored as an option to reduce anxiety in college students (Bamber and Schneider, 2016). Because of the success in previous studies of MBSR and other meditation programs on reducing anxiety (Hoge et al., 2013 and Zeidan et al., 2010), we hypothesized that students with high GAD scores would perform

similarly to those with low GAD scores on a quiz following a brief meditation. Our findings indicate that there was no statistically significant difference in lab quiz scores based on GAD severity (Figure 1), thus supporting our hypothesis. There was also no statistically significant correlation between lab quiz scores and GAD-7 scores, $r(20) = -.32, p = .15$.

Based on prior studies investigating student perceptions of meditation (Gryffin et. al., 2014), we also hypothesized that students with a more positive view of meditation would score higher compared to those who did not find the meditation to be helpful. However, there were no statistically significant correlations between GAD-7 scores and survey responses (Tables 1 and 2). There were two interesting significant correlations between lab quiz scores and the following survey prompts, *The guided meditation reduced my test anxiety* and *I do not experience test anxiety* ($p < .01$ and $p < .05$, respectively, Table 1). Students who agreed that the meditation reduced test anxiety tended to score better on the lab quiz. Students who agreed that they do not experience test anxiety also scored higher on the lab quiz. This may indicate that perceived anxiety can dampen academic performance, since students who think they have anxiety scored worse. This partially supports our hypothesis, although student perception seems to relate more to test anxiety than meditation in this case. For example, we do not know if these correlations exist because students simply thought the meditation reduced their anxiety and therefore they scored better, or if the one-time meditation was actually effective. Future studies will need to investigate these correlations further. When prompted for optional general feedback on their meditation experience, students (n=6) shared mixed results. Some noted that the meditation was helpful, and others stated that they "disliked" the meditation. There was no apparent connection between the comments provided and the lab quiz grades.

Although there was not a statistically significant correlation between lab quiz scores and GAD-7 scores, there appears to be a strong trend: as GAD-7 scores increase (higher anxiety), lab quiz scores decrease. Additionally, the participant categorized as severe (n=1) by the GAD-7 scored the lowest on the lab quiz (25%).

This finding should be explored in more detail by adding additional participants to the study and including a control group receiving no meditation (3 minutes of silence or a different active comparison such as listening to classical music for 3 minutes).

### Limitations

One limitation of this study was that demographic information was not collected during the survey. Although not a main focus of this pilot study, demographic information could be useful for further analysis and allows numerous opportunities for future work. This study also lacked a control group receiving no meditation. The focus of this particular pilot study was to examine how severity of GAD might impact academic performance after a brief meditation. However, it would also be interesting to assess the impact of brief meditation compared to a control with no meditation. Therefore, future studies will utilize a similar experimental design for an entire class as a control. All students in a class participating in a similar experience allowed us to control for other variables such as consistency in the instructor administering the quiz, consistency in the location of the quiz, and other external factors that may influence memory recall (Unsworth et al., 2012). Assessing data across multiple semesters will increase sample size and strengthen data analysis. Additionally, testing different durations and frequencies of the meditation may be explored, as one student commented in survey feedback that the meditation felt a little "rushed."

### CONCLUSION

Undergraduate college students face stress and anxiety daily, affecting academics and quality of life. Meditation offers a way to combat this stress and anxiety. However, many undergraduate students do not have time to commit to a full-time meditation program. This pilot study examined the impact of generalized anxiety disorder on academic performance in undergraduate students following a brief, one-time, guided meditation and found that there was no statistically significant difference in lab quiz scores based on GAD severity. This pilot study laid the foundation for further studies examining

the impact of meditation against a control class of students and examining student perceptions of meditation in greater detail by collecting demographic information.

## ACKNOWLEDGMENTS

## REFERENCES

Bamber MD, Schneider JK. 2016. Mindfulness-based meditation to decrease stress and anxiety in college students: a narrative synthesis of the research. *Educational Research Review.* 18:1-32.

Bergen-Cico D, Possemato K, Cheon S. 2013. Examining the efficacy of a brief mindfulness-based stress reduction (Brief MBSR) program on psychological health. *Journal of American College Health.* 61(6):348-360.

Davidson RJ, Lutz A. 2008. Buddha's brain: neuroplasticity and meditation. *IEEE Signal Processing Magazine.* 25(1):174-176.

Gryffin P, Chen WW, Erenguc N. 2014. Knowledge, attitudes and beliefs of meditation in college students: barriers and opportunities. *American Journal of Educational Research.* 2(4):189-192.

Hoge EA, Bui E, Marques L, Metcalf CA, Morris LK, Robinaugh DJ, Worthington JJ, Pollack MH, Simon NM. 2013. Randomized controlled trial of mindfulness meditation for generalized anxiety disorder: effects on anxiety and stress reactivity. *The Journal of Clinical Psychiatry.* 74(8):786-792.

Hjeltnes A, Binder PE, Moltu C, Dundas I. 2015. Facing the fear of failure: an explorative qualitative study of client experiences in a mindfulness-based stress reduction program for university students with academic evaluation anxiety. *International Journal of Qualitative Studies on Health and Well-being.* 10:10.3402.

Kabat-Zinn J. 1990. Full catastrophe living: using the wisdom of your body and mind to face stress, pain, and illness. *Delacorte Press.*

Löwe B, Decker O, Muller S, Brahler E, Schellberg D, Herzog W, Herzberg PY. 2008. Validation and standardization of the generalized anxiety disorder screener (GAD-7) in the general population. *Medical Care.* 46(3):266-274.

Patel G, Fancher TL. 2013. In the clinic. Generalized anxiety disorder. *Annals of Internal Medicine.* 159(11):ITCI6-1.

Rajiah K, Saravanan C. 2014. The effectiveness of psychoeducation and systematic desensitization to reduce test anxiety among first-year pharmacy students. *American Journal of Pharmaceutical Education.* 78(9):163.

Saoji A, Mohanty S, Vinchurkar SA. 2017. Effect of a single session of yogic meditation technique on cognitive performance in medical students: a randomized crossover trial. *Journal of Religion and Health.* 56(1):141-148.

Spitzer RL, Kroenke K, Williams JB, Lowe B. 2006. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of Internal Medicine.* 166:1092-1097.

Stein MB, Sareen J. 2015. Generalized anxiety disorder. *New England Journal of Medicine.* 373:2059-2068.

Unsworth N, Spillers GJ, Brewer GA. 2012. Dynamics of context-dependent recall: An examination of internal and external context change. *Journal of Memory and Language.* 66:1-16.

Zeidan F, Johnson SK, Diamond BJ, David Z, Goolkasian P. 2010. Mindfulness meditation improves cognition: evidence of brief mental training. *Consciousness and Cognition.* 19(2):597-605.

## APPENDIX A: MindFIT Three Minute Breathing Reset by Richard Goerling

This is a great breath drill that you can do any time to reset your breath, downregulate any stress, and prepare your mind and body for performance. So let's begin, with an upright sitting or standing posture, mind and eyes open, and let's take three slow and deep in breaths and out breaths. And now let's allow our breath to find its natural rhythm for a moment. Next, breathing in, slowly and deeply, count to five. And then hold your breath for a count of four. Then exhale deeply and slowly for a count of seven. And we're really pushing out that air from our lungs forcefully on this deep and slow exhale. Again, breathe in slowly and deeply for a count of five. Then hold our breath for a count of four. And exhale deeply, slowly, forcefully, for a count of seven. Breathe this way for three to five cycles total. And then allow your breath to return to its natural rhythm. Just sit for a moment, breathing with the natural rhythm. On your next task, step into the world with gratitude for your breath.

## APPENDIX B: Meditation and Test Anxiety Student Survey

Please select one option below for the following statements.

| Strongly Disagree | Disagree | Neither Disagree or Agree | Agree | Strongly Agree |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

1. I felt calm during the meditation.
2. I did not enjoy the guided meditation.
3. I would like to regularly participate in meditation in the classroom.
4. Regularly participating in meditation in the classroom would not reduce my test anxiety.
5. The guided meditation reduced my test anxiety.
6. I do not experience test anxiety.
7. The guided meditation did not help me feel more focused for my quiz.
8. I would prefer meditation in the classroom over meditation on my own.

Please select one option below for the following statements.

| None | A little | Moderate | High | Professional |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

1. What is your understanding of meditation?
2. What is your experience in practicing meditation?

Please provide feedback on the meditation experience below.
1. Use this space for any additional comments you wish to share regarding the meditation experience.
2. Comment on other methods you use to reduce test anxiety, if applicable.

# Predictors of Frequency and Type of Social Support Seeking in Response to Stress

Marissa T. McNeace
Donna Nelson, Ph.D. (Mentor)

## ABSTRACT

This research focuses on predictors of social support seeking in response to stress, and the link between well-being and different modes of support seeking. The main research questions focused on the type of venue preferred for provision of support (online or face to face), how different person-level variables influence support seeking behaviors, how different types of stressors influence the choice of venue for support seeking, and how different types of support seeking relate to happiness. Survey data was collected through social media and university classes via Qualtrics. A paired-samples t-test was conducted to compare means of overall online social support seeking and face to face social support seeking. There was a significant difference in the scores for overall online support seeking (M=1.65, $SD$=.74) and overall face to face support seeking (M=3.38, $SD$=1.22) conditions; $t(123)$=-14.99, $p < 0.005$, revealing that face to face support seeking was more popular. Next, a three-stage hierarchical regression demonstrated that age was negatively associated with support seeking in general, $F(1,124) = -26.14$, $p < .001$. On the other hand, extraversion, $F(6,119) = 7.07$, $p < .001$, and social network size, $F(7,118) = 7.98$, $p < .001$, predicted more frequent face to face support seeking. A four-stage hierarchical regression demonstrated that face to face support seeking promoted greater happiness, $F(8,108) = 9.42$, $p < .001$, while online support seeking did not. Finally, a one-way repeated measure ANOVA was conducted to determine if stress type predicted the preferred mode of support seeking (online or face-to-face). These tests revealed that there was a significant effect of stressor type on venue chosen, $F(8,108) = 9.42$, p = .001. Individuals were more likely to discuss work and school stress in face to face support seeking ($M= 3.72$) and less likely to discuss friend/roommate stress in online support seeking ($M$=1.5) Our findings contribute to the limited literature exploring social support seeking behaviors and the factors that influence these behaviors. Future plans for this research include exploring reasons people may prefer different support venues, such as the perceived costs or benefits of seeking help face to face or online, as well as the perceived effectiveness of different modes of support.

## Personality Predictors of Social Support Seeking Behavior and Attitudes

### LITERATURE REVIEW

Social support is a fundamental aspect of human relationships and can be defined as the exchange of resources between two individuals, intended to enhance the well-being of the recipient (Cleary, 2017). There are several subtypes of social support which have been labeled instrumental support, emotional support, and informational support. Instrumental support focuses on tangible help, which involves assistance such as loaning someone money or babysitting someone's child. Emotional support involves providing acceptance, reassurance, or encouragement to a person in distress. Lastly, informational support involves the provision of guidance, such as when a person who has relevant experience provides advice to help an individual cope with a stressor, and so on (Cleary, 2017; Meng et. al., 2017).

All of these types of social support are important to coping and health, as demonstrated by a substantial body of research focusing on the beneficial effects of social support with regard to physical and mental health. Social support is widely seen as a positive coping mechanism for different life stressors, as it is considered to be a mechanism that buffers against stress and promotes health overall (Leung, Pachana, &

McLaughlin, 2014; Pow et. al., 2017; Shavitt et. al., 2016). Indeed, social support has been linked to more favorable outcomes for persons coping with various challenges including arthritis, alcoholism, depression, and so on (Leung, Pachana, & McLaughlin, 2014). Thoits, a noted researcher in this field, outlines that social support does this by acting as "coping assistance." His theory states that stressful situations can be modified by the provision of help or support from another person. For example, a stressful event can be modified when other people help the individual in the event change the situation, whether that be temporarily loaning a friend money or simply telling a joke to lighten the mood. Another avenue for modifying the situation could be helping the individual reinterpret the situation to be less threatening. In turn, their modifying behavior changes how the stressed individual copes by changing their emotional reaction. This is accomplished by facilitating and strengthening the affected individual's coping attempts (Thoits, 1986). There is also some evidence to support the idea that social support provides direct benefits, whether or not stress or disruption in an individual's life is present. A positive relationship was seen with social support and health in individuals that were under large amounts of stress, as well as in individuals who generally had low stress levels. This leads researchers to believe that while social support can be important in helping those who are under large amounts of stress, it may be equally important in those who are not dealing with large amounts of stress as well (Pow et. al., 2017).

Social support has also been linked to overall well-being and positive affective states. In one study of elderly residents in an assisted living community, social network size predicted perceived social support as well as subjective well-being. Older individuals with a large number of social contacts who felt supported by their network of family and friends had higher levels of happiness and life satisfaction (Wang, 2016). This study does not stand alone, as other empirical studies have found very similar connections between social support, social network size, and subjective well-being and happiness. It is a generally accepted idea that

individuals who have larger social networks and receive more social support are happier (Chan, 2006; McLaughlin et. al., 2010; Wang, 2016).

While a great deal of research to date has focused on the general topic of social support and its link to mental and physical well-being, comparatively little attention has been devoted to the processes involved in seeking social support. The most prominent support seeking literature focuses around the mobilization of social support, or support mobilization. This concept is the process of one assembling their social-support resources due to a threat or potential threat (Eckenrode & Wethington, 1990). To break it down, this basically looks at how one seeks available social support in order to best cope with whatever stressor they are facing. This process is often studied in attempts of finding what factors influence one's seeking of support. There is data that suggests locus of control, self-efficacy, and sociodemographic variables may play a role in determining how one mobilizes their social support (Eckenrode, 1983).

However, the way people seek support is changing due to the impact of the internet and social networking. And while seeking support behavior is changing, there is little research to account for how social media plays a role in this. It is no surprise that over the last decade social networking sites have made their way into the popularity of the internet. In turn, this popularity has changed the way that people relate to one another. Social networking sites were first found as anonymous online support groups that individuals could visit to interact with strangers to receive support about a variety of stressors, most notably health challenges. Stakes were low due to the anonymity of the process, and overall, the support that was given proved to help those receiving it (Boyd & Ellison, 2007). These anonymous support groups eventually evolved into not-so-anonymous support groups that individuals could connect with online, such as common day social media sites like Facebook and Twitter. With the creation of Facebook in 2004, online social networking changed altogether. The anonymity was taken away, and individuals were given a chance to interact with people in their social networks via this online platform. Other social networking sites such as

Twitter had the same effect, and both provided a new process to seek support while using these platforms. For example, seeking support became as easy as sending out a tweet, updating your "status," or using messaging services on these sites to contact a friend for advice (Charnigo & Barnett-Ellis, 2007).

Similarly to how social media has changed over time, the research surrounding it has changed as well. This can be found specifically when looking at social adjustment. In the beginning stages of internet popularity, high usage of the internet and communication with anonymous social groups found on it were mainly suggested to be detrimental to one's social adjustment. This was due to the fact that people were going online to socialize instead of interacting with those around them; therefore they were not building meaningful friendships and relationships with the society and their local social network (Engelberg & Sjoberg, 2004). However, as social networking sites such as Facebook and Twitter arose, researchers started to change their mind on how social media may affect social adjustment (Gray et al., 2013; Seo et al., 2016; Lin et al., 2011). For example, Lin et al. (2011) noted that social networking now may facilitate adjustment instead of harming it, by providing a new avenue for international students to connect with friends as well as the culture found around them.

To understand what determines the type of support being sought, the amount of support seeking, and the satisfaction with social support outcomes, one must account for situation and person variables. While little literature has explored situation variables, person variables such as locus of control, self-efficacy, and level of education have been related to support seeking behaviors (Eckenrode, 1983; Eckenrode & Wethington, 1990). While these person variables and other similar ones have been studied in regard to social support seeking behaviors, personality overall has not been widely studied. The current study attempts to focus on the use of personality as a predictor of these behaviors and intends to use the Big Five Personality Model in doing so. This model is one of the best accepted and most commonly used measures in assessing personality (Goldberg,

1992). The Big Five Personality Model focuses on five major dimensions of personality: Openness, Conscientiousness, Agreeableness, Extraversion, and Neuroticism. All of these dimensions are on a continuum, and therefore an individual can be scored as high or low on a dimension.

## Current Study

The goal of our current study is to focus on the use of personality as a predictor of social support seeking behaviors and attitudes. More specifically, we are investigating whether the Big Five Personality Model traits predict support seeking for different types of stressors (school/work stress, family stress, friend/roommate stress, romantic relationship/dating stress, and daily hassle stress) and whether these personality factors influence the type of support sought (online or face to face). We will assess perceptions of the quality of the social support received for different stressors and different types of support. We will also examine links between social support seeking behavior and well-being. We look to address the following research questions:

(1) Which venue is preferred (overall) when seeking social support (e.g., online, in-person)?
(2) Which online venues are most popular for seeking support?
(3) How do person-level variables (e.g., personality, age, social network size) influence support seeking behaviors (frequency and type)?
(4) How do different types and frequency of support seeking relate to well-being?
(5) Does the type of stressor influence the choice of venue for support seeking?

## METHODS
### Participants

We had 126 participants (103 women, 23 men). Participants were recruited through social media and summer undergraduate courses at a midsized, southeastern university. Participants included Caucasians (75%), African Americans (14%), those who are Multiracial (4%), Hispanics/Latinos (3%), and other (4%). There was an age range of 18 to 62.

## Procedure

The 115-item survey was administered online via Qualtrics and was self-paced, with most respondents finishing within 20 minutes. The survey was prefaced with an informed consent document. Although no participants were directly compensated, some may have been given extra credit in their college course. Following the survey, the participants were provided a debriefing form. All work was carried out with the approval of the University Institutional Review Board, and we followed all federal and local guidelines for the protection of human participants.

## Measures

**Big Five Inventory.** The construct of personality was measured with the use of the Big Five Inventory (Goldberg, 1992). Respondents completed the 44-item scale which assesses the traits that fall under the Big Five categories (Openness, Conscientiousness, Extraversion, Neuroticism, and Agreeableness). Participants answered the items on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

**Life Satisfaction Scale.** To assess overall satisfaction with one's current life, the Life Satisfaction Scale (Diener, Emmons, Larsen & Griffin, 1985) was administered. Participants answered 5 questions concerning how they feel about their life thus far on a 7-point Likert Scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree).

**Fordyce Emotion Questionnaire.** Respondents' feelings of happiness and well-being were measured via the Fordyce Emotion Questionnaire (Fordyce, 1988). This questionnaire consisted of 2 questions, with the first asking respondents to rate how happy or unhappy they usually feel and the second asking them to identify the percent of the time (out of 100) that they feel happy, unhappy, and neutral. The first question utilized an 11-point Likert scale ranging from 1 (Extremely happy) to 11 (Extremely unhappy), and the second question incorporated three self-reported number values adding up to 100.

**Lubben Social Network Scale.** To characterize respondents' social support network, the Lubben Social Network Scale (Lubben, 1988) was utilized. The brief, 6 item version was chosen due to its high level of reliability reported in past research ($\alpha$=.83). Respondents answered questions about the number of people they interact with, confide in and seek help from, in relation to both friends and family. All responses were made on a 5-point Likert scale that ranged from 0 (none) to 5 (nine or more).

**Self-Constructed Scale.** To analyze the social support seeking behaviors of our participants, we constructed our own measure that was loosely based upon the types of social support outlined in the COPE inventory (Carver, Scheier & Weintraub, 1989). Our scale began by asking participants how frequently they use online platforms (Facebook, twitter, and anonymous online support groups) to seek support from others. Responses were given on a 6-point Likert scale ranging from Very Rarely to Very Often. The next sections were organized by five different types of stressors (School/Work Stress, Family Problems, Friend/Roommate Problems, Romantic/Dating Problems, and Daily Hassles). Each section contained 8 questions, with four focused on online support seeking behaviors (one question each for emotional, instrumental, and informational support; one question for the helpfulness of support received), and the other four focused on face-to-face support seeking behaviors (one question each for emotional, instrumental, and informational support; one question for the helpfulness of support received). Responses were given on a 6-point Likert scale ranging from 1 (Very Rarely) to 6 (Very Often), with the exception of the question assessing helpfulness which utilized a 5-point Likert scale ranging from 1 (Strongly agree) to 5 (Strongly Disagree). Following these sections, respondents were asked overall how much support they receive from family, close, friends, acquaintances/Facebook friends, and romantic partners. Lastly, individuals were asked how frequently they offer support to others online and face-to-face. Responses for these two sections were made on a 5-point Likert scale ranging from 1 (A great deal) to 5 (None at all).

**Demographics.** Participants reported their age, gender, race, education level, and romantic relationship status.

## RESULTS

A paired-samples t-test was conducted to compare means of overall online social support seeking and face to face social support seeking.

There was a significant difference in the scores for overall online support seeking (M=1.65, SD=.74) and overall face to face support seeking (M=3.38, SD=1.22) conditions; $t(123)=-14.99$, $p < 0.005$. The 95% confidence interval for the mean difference between the two rating was -1.95 to -1.49.

Table 1

*Multiple Regression Analyses for Venue Type of Social Support Seeking*

|  | Face to Face Support Seeking | | | Online Support Seeking | | |
|---|---|---|---|---|---|---|
|  | B | Total $R^2$ | $\Delta R^2$ | β | Total $R^2$ | $\Delta R^2$ |
| Step 1 |  | .17*** | .17*** |  | .02 | .02 |
| Age | -.42*** |  |  | -.15 |  |  |
| Step 2 |  | .26*** | .09* |  | .08 | .06 |
| Age | -.46*** |  |  | -.10 |  |  |
| Extraversion | .21* |  |  | .06 |  |  |
| Agreeableness | .13 |  |  | .08 |  |  |
| Conscientiousness | .15 |  |  | -.19 |  |  |
| Neuroticism | .17 |  |  | .14 |  |  |
| Openness | .08 |  |  | .02 |  |  |
| Step 3 |  | .32*** | .06** |  | .08 | .00 |
| Age | -.47*** |  |  | -.10 |  |  |
| Extraversion | .17* |  |  | .05 |  |  |
| Agreeableness | .12 |  |  | .08 |  |  |
| Conscientiousness | .11 |  |  | -.19 |  |  |
| Neuroticism | .21 |  |  | .14 |  |  |
| Openness | .07 |  |  | .02 |  |  |
| Social Network Size | .26** |  |  | .02 |  |  |

N=120. * $p < .05$, ** $p < .01$, *** $p < .001$

Two different three stage hierarchical multiple regressions were conducted with Face to Face Support Seeking and Online Support Seeking as the two different dependent variables. These regressions are presented in Table 1.

**Face to Face Support Seeking.** Step 1 of a hierarchical regression analysis controlled for the demographic variable age. Personality variables (Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness) were entered at step two. Finally, at stage three, social network size was entered. This analysis revealed that at stage one, age contributed significantly to the regression model, $F (1,124) = 26.14$, $p< .001$, and accounted for 17% of the variation in face to face support seeking with a negative correlation between the two. Introducing the personality variables explained an additional 9% of variation and this change in $R^2$ was significant, $F (6,119) = 7.07$, $p < .001$.

More specifically, Extraversion came out as having a positive correlation with support seeking and Neuroticism was a marginal predictor of face to face support seeking. Lastly, adding social network size to the regression model explained an additional 6% of the variation in face to face support seeking and this change in $R^2$ was significant, $F (7,118) = 7.98$, $p < .001$. When all three independent variables were included in stage three of the regression model, the most important predictors of face to face support seeking were age, with a negative correlation, and social network size, with a positive correlation. Together the three independent variables accounted for 32% of the variance in face to face support seeking.

**Online Support Seeking.** Step 1 of a hierarchical regression analysis controlled for the demographic variable age. At step 2, personality variables (Extraversion, Agreeableness,

Conscientiousness, Neuroticism, and Openness) were entered. Finally, at stage three, social network size was entered. This analysis revealed that at all stages, there was no significant contributors to the regression model and no significant changes in $R^2$.

Table 2

*Hierarchical Regression Analysis for Happiness*

| | | Happiness | |
|---|---|---|---|
| | B | Total $R^2$ | $\Delta R^2$ |
| Step 1 | | .01 | .01 |
| Age | .01 | | |
| Step 2 | | .38*** | .37*** |
| Age | -.03* | | . |
| Extraversion | .60** | | |
| Agreeableness | .39 | | |
| Conscientiousness | .38 | | |
| Neuroticism | -1.17*** | | |
| Openness | -.23 | | |
| Step 3 | | .39*** | .01 |
| Age | -.03* | | |
| Extraversion | .62** | | |
| Agreeableness | .41 | | |
| Conscientiousness | .32 | | |
| Neuroticism | -1.13*** | | |
| Openness | -.22 | | |
| Overall Online | -.26 | | |
| Step 4 | | .41*** | .02* |
| Age | -.02 | | |
| Extraversion | .52** | | |
| Agreeableness | .37 | | |
| Conscientiousness | .21 | | |
| Neuroticism | -1.21*** | | |
| Openness | -.28 | | |
| Overall Online | -.35 | | |
| Overall Face to Face | .30* | | |

N=117. * $p < .05$, ** $p < .01$, *** $p < .001$

A four-stage hierarchical multiple regression was conducted with Happiness as the dependent variable. The results are presented in Table 2. Step 1 controlled for the demographic variable age. Following this step, personality variables (Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness) were entered. At stage three, overall online support seeking was entered. Finally, at stage 4, overall face to face support seeking was entered. The hierarchical multiple regression revealed that at stage one, age did not contribute significantly to the regression model, $F (1,115) = .62, p > .05$, and accounted for just 17% of the variation in Happiness. Introducing the personality variables explained an additional 37% of variation and this change in $R^2$ was significant, $F (6,110) = 11.27, p < .001$. More specifically, Neuroticism was highly negatively correlated with Happiness and Extraversion was positively correlated to Happiness. Adding Overall Online Support Seeking to the regression model explained an additional 1% of the variation in Happiness, and this change in $R^2$ was not significant. Lastly, adding Overall Face to Face Support Seeking explained an additional 2%, and this change in $R^2$ was significant, $F (4,120) = 10.593, p < .001$. When all the independent variables were included in stage four of the regression model, the most important predictors of Happiness were Neuroticism, Extraversion, and Overall Face to Face Support Seeking. Together the independent variables accounted for 41% of the variance in Happiness.

A one-way repeated measure ANOVA was conducted to compare stressor type on venue type chosen in School/Work, Family, Friend/Roommate, Romantic/Dating, and Daily Hassles stress conditions. There was a significant effect of stressor type on venue chosen, $F(8,108) = 9.42, p = .001$. Two paired samples t-tests were conducted to make post hoc comparisons

between conditions. A first paired samples t-test indicated that there was a significant difference in face to face support seeking in School/Work stress (*M*=3.72) compared to Family stress (*M*=3.39), Friend/Roommate stress (*M*=3.25), Romantic/Dating stress (*M*=3.16), and Daily Hassles stress (*M*=3.27); t(123) = 6.62, p = .000. A second paired samples t-test indicated that there was a significant difference in online support seeking in Friend/Roommate stress (*M*=1.49) compared to School/Work stress (*M*= 1.75), Family stress (*M*=1.61), Romantic/Dating stress (*M*=1.62), and Daily Hassles stress (*M*=1.74); t(123) = 7.91, p = .001.

## DISCUSSION
### Overview of Purpose

The majority of research examining social support has focused on the importance of perceived support to health and well-being. This is illustrated in Thoit's (1986) "coping assistance" hypothesis, the buffering hypothesis (Thoits, 1986), and a large body of research that has documented numerous beneficial effects of social support (Leung, Pachana, & McLaughlin, 2014; Pow et. al., 2017; Shavitt et. al., 2016). While it is important to understand this connection between social support and an individual's health, it is also equally important to understand the circumstances surrounding attempts to obtain social support. However, relatively little research attention has been devoted to exploring the process of seeking social support. Thus, we have limited knowledge of factors that predict who seeks support and under what circumstances. This study explored the influence of personality variables as well as the type of stressor experienced on support seeking behavior. We also examined preferences for online venues for support seeking, compared to more traditional, face to face interactions.

### Findings

To begin, we found that despite high levels of social media use in contemporary society, face to face interactions are still a much more popular mode of support seeking compared to online exchanges. This finding may be due to normative influence pressures regarding appropriate avenues for seeking support. In other words, it may be less socially acceptable to ask for support to a large community of "online friends" compared to making one-on-one requests for help. Furthermore, online bids for support may project an unfavorable impression, interfering with the common goal of using social media to showcase the "good" sides of one's life. Alongside this, seeking out social support face to face gives the opportunity to see the facial affect and body language, as well as the tone of voice of the individual offering help. This can be more personal and constructive than just reading words typed out on social media. We also examined which online venues would be most popular for seeking support. While we had little reports of using online venues to seek out social support, the most popular venue among our participants was Facebook. This may be due to it being a more popular venue overall, or other unknown factors.

We also tested the impact of personal variables on support seeking behaviors and found that age was negatively linked to seeking support, while extraversion and larger social network promoted greater support seeking. Our observed age effects may be explained by the notion that as people mature, they may have less need for seeking out help from others. Older participants may also rely on their earlier experiences in life as support in comparison to social support. For extraverts, they may seek help more frequently because they are more comfortable in social situations as opposed to introverts. Extraverts draw their energy from interactions with others (Goldberg, 1992) so they may find social support more helpful than other types of support. Those with larger social networks have more friends and family who are available to provide support, and this may explain why they engage in support seeking more frequently.

Furthermore, we examined the impact of type of stressor and venue on the frequency of support seeking and found that there was less support seeking for friend problems, compared to other types of problems, on social media. This finding may be due to it being less socially acceptable to disclose personal problems about friends in a public forum, or possibly due to the fact that individuals may be "friends" with or

follow the friends they would be talking about online. For face-to-face support, there was more support seeking for school or work stress over all the other types of stressors. This may be because individuals most frequent in-person interactions are with fellow coworkers/students, therefore they seek their support about common interests/concerns that they may share. It may also be more socially acceptable for someone to disclose work stress over more personal stressors, such as family or relationship stress. Lastly, we found that in relation to well-being, face to face support seeking promoted greater happiness, while online support seeking did not. This may explain why face to face support seeking is distinctly more popular than online support seeking.

## Limitations

Our study contained a few notable limitations. The largest limitation would be the lack of diversity in our sample, as it was comprised of mostly female and white participants. The small number of male participants made us unable to test for expected gender differences in help seeking that have been found in previous literature (McLaughlin et. al., 2010; Eckenrode & Wethington, 1990; Thoits, 1995). Overall, the sample was not representative of the total population as a whole in race nor gender, therefore limiting the generalizability of our results to the population.

## Future Directions

One area for future investigation would be to examine reasons that individuals prefer to seek support using one venue over another. Specifically, individuals could be interviewed to determine their perceptions of the costs and benefits to seeking support via different venues (in-person and online). Alongside this, it would be useful to explore the actual effectiveness/benefits of different modes of support as a function of person variables and type of stressor.

## REFERENCES

Boyd, D. M., & Ellison, B. N. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication, 13*(1), 210-230. doi:10.1111/j.1083-6101.2007.00393.x

Chan, Y. K., & Lee, R. P. L. (2006). Network size, social support and happiness in later life: A comparative study of Beijing and Hong Kong. *Journal of Happiness Studies, 7*(1), 87-112. doi:10.1007/s10902-005-1915-1

Charnigo, L., & Barnett-Ellis, P. (2007). Checking out facebook.com: The impact of a digital trend on academic libraries. Information Technology and Libraries, 26(1), 23-34. doi:10.6017/ital.v26i1.3286

Cleary, P. D. (2017). Social support: Conceptualization and measurement. In *Evaluating family programs* (pp. 195-216). Routledge.

Diener, E., Emmons, R. A., Larsen R. J., & Griffin S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71-75. doi:10.40-3590/93/83.00

Eckenrode, J. (1983). The mobilization of social supports: Some individual constraints. *American Journal of Community Psychology, 11*(5), 509-528. doi:10.1007/BF00896802

Eckenrode, J., & Wethington, E. (1990). The process and outcome of mobilizing social support. In S. W. Duck & R. C. Silver (Eds.), *Personal relationships and social support* (pp. 83-103). Thousand Oaks, CA: Sage.

Engelberg, E., & Sjoberg, L., (2004) Internet use, social skills, and adjustment. *Cyberpsychology and Behavior, 7*(1), 41-47. doi:10.1089/109493104322820101

Fordyce, M. W. (1988). A review of research on the happiness measures: A sixty second index of happiness and mental health. *Social Indicators Research, 20,* 63-89. doi:10.1007/BF00302333

Goldberg, L. R. (1992). The development of markers for the big-five factor structure. *Psychological Assessment, 4*, 26-42. doi:10.1037/1040-3590.4.1.26

Gray, G., Powell, P. W., Reese, M. K. (2013) Connecting with others: A qualitative study of online social networking site usage. *The Practitioner Scholar: Journal of Counseling and Professional Psychology, 2*, 52-67. doi: 10.11637/7985

Kessler, R. C., & McLeod, J. D. (1984). Sex differences in vulnerability to undesirable life events. American Sociological Review, 49(5), 620-631. doi:10.2307/2095420

Landers, R. N. & Lounsbury, J. W. (2006). An investigation of big five and narrow personality traits in relation to internet usage. *Computers in Human Behavior, 22*, 283-293. doi:10.1016/j.chb.2004.06.001

Leung, J., Pachana, N. A., & McLaughlin, D. (2014). Social support and health-related quality of life in women with breast cancer: a longitudinal study. *Psycho-Oncology*, *23*(9), 1014-1020.

Lin, K. & Lu, H. (2011). Why people use social networking sites: An empirical study integrating network externalities and motivation theory. *Computers in Human Behavior, 27* (3), 1152-1161. doi: 10.1016/j.chb.2010.12.009

Lubben, J. (1988) Assessing social networks among elderly populations. *Family & Community Health: The Journal of Health Promotion & Maintenance, 11,* 42-52. doi:10.1016/j.chb.2004.06.001

McLaughlin, D., Vagenas, D., Pachana, N. A., Begum, N., & Dobson, A. (2010). Gender difference in social network size and satisfaction in adults in their 70s. *Journal of Health Psychology, 15*(5), 671-679. doi:10.1177/1359105310368177

Meng, J., Martinez, L., Holmstrom, A., Chung, M., & Cox, J. (2017). Research on social networking sites and social support from 2004 to 2015: a narrative review and directions for future research. *Cyberpsychology, Behavior, and Social Networking, 20*(1), 44-51.

Seo, H., Harn, R., Ebrahim, H. & Alda, J. (2016). International students' social media use and social adjustment. First Monday, 21 (11), 76-89. doi: 10.5210/fm.v21i11.6880

Shavitt, S., Cho, Y. I., Johnson, T. P., Jiang, D., Holbrook, A., & Stavrakantonaki, M. (2016). Culture moderates the relation between perceived stress, social support, and mental and physical health. *Journal of Cross-Cultural Psychology*, *47*(7), 956-980.

Shumaker, S. A., & Brownell, A. (1984). Toward a theory of social support: Closing conceptual gaps. *Journal of Social Issues, 40*, 11-36. doi:10.111/.1540-4560.1984.tb01105.x

Thoits, P. A. (1986). Social support as coping assistance. *Journal of Consulting and Clinical Psychology, 54*, 416-423. doi:10.1037/0022-006X.54.4.416

Thoits, P. A. (1995). Stress, Coping, and Social Support Processes: Where Are We? What Next? *Journal of Health and Social Behavior, 35,* 53-79. doi:10.2307/2626957

Wang, X. (2016). Subjective well-being associated with size of social network and social support of elderly. *Journal of Health Psychology, 21*(6), 1037-1042. doi:10.1177/1359105314544136

Wethington, E., McLeod, J., & Kessler, R. C. (1987). The importance of life events for explaining sex differences in psychological distress. In R. C. Barnett, L. Biener, & G. K. Baruch (Eds.), *Gender and Stress* (pp.144-154). New York, NY, US: Free Press.

# Locating Mutagen-sensitivity Gene *mus109* in the *Drosophila melanogaster* Genome Using Deficiency Mapping

Chandani Mitchell
Kathryn Kohl, Ph.D. (Mentor)

## ABSTRACT

The complex processes involved in repairing damaged DNA are still being elucidated. Some genes that are known to have roles in the DNA repair process have been identified, such as the mutagen-sensitivity genes, or *mus* genes, in *Drosophila melanogaster*. However, the precise genomic location of some *mus* genes is still unknown, including *mus109*. It is known that mutations in *mus109* cause chromosomal aberrations resulting in larval death, and previous research has mapped *mus109* to a region of the X chromosome consisting of over 520,000 nucleotides and 41 genes. Therefore, this study aimed to locate *mus109* using deficiency mapping. The *mus109*$^{D2}$ male flies were crossed to four deficiencies covering the 8F10-9B1 region of the genome producing four possible classes of offspring. Brood 1 larvae and Brood 2 larvae were treated with $H_2O$ and 0.05% MMS, respectively. Offspring were scored for sex and eye phenotype, and this data was used in complementation analysis to narrow the probable genomic location of *mus109* to 12% of the original.

## INTRODUCTION

In one day, a mammalian cell's DNA can be damaged with ~10,000 single-strand breaks and 10-50 double-strand breaks (Vilenchik and Knudson, 2003 qtd. in Madabhushi et al. 2014), as well as other damages such as lesions (Madabhushi, et al. 2014). An inability to repair DNA has been linked to various human diseases and disorders. For example, studies have shown that defective DNA repair has a role in neurodegeneration (Madabhushi et al. 2014), and the inability to fix DNA damage caused by UV radiation results in xeroderma pigmentosum, a disease resulting in an elevated risk of skin cancer (Driscoll 2012). Therefore, the study of DNA repair will not only aid us in understanding the human body and how it works, but it will also assist us in treating the many diseases and disorders caused by defective DNA repair like xeroderma pigmentosum and neurodegeneration.

An organism commonly used for the study of DNA repair is the fruit fly *Drosophila melanogaster*. The use of *D. melanogaster* as a model to study genetics has many advantages in comparison to other models. For example, it is more cost effective than using other organisms, and the flies do not need significant storage space. Additionally, flies produce many generations within a relatively short time span because they have generations every 10 days. Finally, because they only possess four chromosomes and have a fully sequenced genome, the genetic analysis of this organism is simplified (Hales et al. 2015). Forward genetic screens have identified 58 "*mus*" (mutagen-sensitive) genes within the *D. melanogaster* genome, 14 of which have been mapped molecularly (Sekelsky 2017). The unmapped *mus* gene that will be the focus of this research is *mus109*. It is an essential gene, and homozygous mutants are sensitive to several mutagenic agents. Mutations in this gene commonly cause chromosomal lesions in the junctions between heterochromatin and euchromatin, resulting in cell death in the larva (Baker et al. 1982). There are three publicly-available recessive alleles of *mus109*: *mus109*$^{lS}$ (Baker et al. 1982), *mus109*$^{D1}$ (Smith 1976), and *mus109*$^{D2}$(Mason et al. 1981).

This study aims to map the *mus109* gene within the genome of *D. melanogaster* using a form of complementation analysis called deficiency mapping. In deficiency mapping, female flies with deletions in the X chromosome are crossed with male flies carrying an allele of *mus109*. If a deletion fails to complement the *mus109* allele, then it can be concluded *mus109* is within the deleted region.

## MATERIALS & METHODS
### Fly Stocks

Five stocks of *Drosophila melanogaster* were ordered from the Bloomington Drosophila Stock Center (Indiana University). One fly stock contained a known allele of *mus109* ($sn^3$ $mus109^{D2}/C(1)Dx, y^1 f^1$) and the remaining four stocks contained deficiencies covering the 8F10-9B1 region of the genome, referred to as Df(A), Df(B), Df(C), and Df(D) in this work. Flies were kept on standard corn syrup/soy media (Bloomington recipe) in a 25°C incubator on a 12-hour dark;12-hour light cycle.

### Deficiency Mapping

Deficiency-mapping was conducted using the mutagen-sensitivity protocol reviewed in Sekelsky (2017). Briefly, virgin female flies from each Df stock were identified based on both time (less than 8 hours from eclosion) and physical appearance, and were collected for up to 4 days. Then five 1-4 day old virgin females were crossed with five $sn^3$ $mus109^{D2}$ males per vial for a total of 10 vials for each Df (Brood 1). The day of crossing was designated as Day 0. On Day 3, the flies were flipped into new vials, producing Brood 2, and the following day each vial of Brood 1 was mock-treated with 250 µl of autoclaved water. On Day 5 of the overall experiment (Day 2 of Brood 2), the parent flies were cleared from the Brood 2 vials. On Day 6, Brood 2 was treated with 250 µl of 0.05% MMS per vial. On Day 18 for each Brood, all offspring were frozen. This process was repeated for each Df to obtain technical replicates. Due to viability issues, *Df(C)* was the exception to this protocol: four replicates with fewer vials were used in lieu of two replicates of 10 vials each (number of vials used ranged from 5-10 vials per replicate).

### Scoring and Analysis

Frozen offspring were scored and data recorded based upon the sex and eye shape phenotype. The four possible phenotypic outcomes of the crosses were: male with wild-type shaped eyes, female with wild-type shaped eyes, male with Bar eyes, and female with Bar eyes (**Figure 1)**. Relative survival was then calculated as the ratio of mutant (non-Bar): control (Bar) flies in the MMS-treated vials, normalized to the same ratio in the mock-treated vials. Deficiencies showing sensitivity to MMS (less than 10% relative survival) were presumed to uncover the *mus109* locus (Laurencon et. al 2004).
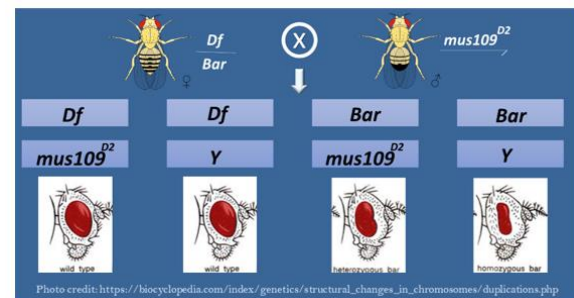


**Figure 1:** Female deficiency *(Df)* / *Bar* flies crossed to $mus109^{D2}$ male flies produce four possible classes of offspring: $Df$ / $mus109^{D2}$ females with wild-type eyes; $Df$ / $Y$ males with wild-type eyes; Bar / $mus109^{D2}$ females with Bar eyes; and *Bar* / *Y* males with Bar eyes.

## RESULTS

*Vial observations show differences between Brood 1 and Brood 2*

The larvae and pupae were observed on Day 21 for both Broods 1 and 2. The vials that were mock-treated with water had pupal cases that were light in color and there were larvae visible at the bottom of the vials (Figure 2A). However, stark differences were seen when observing the vials of Brood 2. These vials, which were treated with MMS, had dark pupal cases indicative of organismal death and very few larvae (Figure 2B). These differences were observed for every deficiency analyzed.
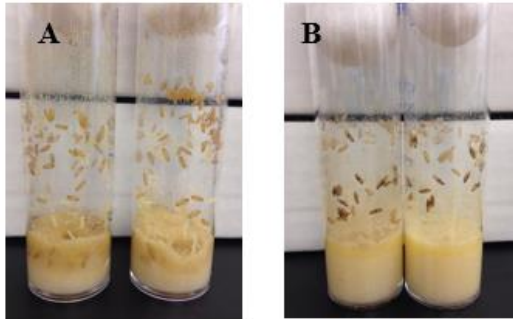
**Figure 2A:** Vials of deficiency B Brood 1 (H2O).

**Figure 2B:** Vials of deficiency B Brood 2 (MMS).

**Figure 2A & 2B:** These vials represent what was typically observed for all of the vials of each deficiency.

### Relative Survival Percentages

After scoring the offspring from all deficiencies, the relative survival percentage was calculated for each. In all cases, relative survival was 0% (Table 1).

| Table 1: Relative survival percentage | | | |
|---|---|---|---|
| Deficiency | Brood 1 (n) | Brood 2 (n) | Relative Survival |
| A | 1,673 | 1,111 | 0% |
| B | 1,497 | 978 | 0% |
| C | 832 | 430 | 0% |
| D | 1,057 | 693 | 0% |

### DISCUSSION

There is little known about the mutagen-sensitivity gene *mus109* including its precise location in the *Drosophila melanogaster* genome. However, the gene was previously mapped to a region on the X chromosome that contained over 520,000 nucleotides and 41 genes (Mason et. al 1981). Thus, this study continued to narrow the location of *mus109* using a mutagen-sensitivity assay (Sekelsky 2017) paired with deficiency mapping.

Female flies with a deficiency were crossed with a male fly that had the *mus109D2* allele. Brood 1 was mock-treated with water and Brood 2 was treated with MMS. The flies were then scored to determine whether there was a difference in survival for mutant and non-mutant flies by calculating the relative survival percentage. All relative survival percentages were calculated to be 0%, which indicated that the flies were sensitive to the DNA damaging agent MMS

(Laurencon et. al 2004). These percentages suggest that *mus109* was within each deficiency and therefore, was in a region where all the deficiencies overlapped. This narrowed region consisted of just over 62,000 nucleotides and 9 genes (Gramates et al. 2017). The genes included previously studied genes and currently unstudied "CG" genes. Future work will seek to identify a candidate *mus109* gene by using computational methods to learn more about the function of all nine genes. Then the candidate gene will be sequenced for all alleles of *mus109 (mus109IS, mus109D1,* and *mus109D2)* and a rescue construct will be constructed.

### REFERENCES

Baker BS, Smith DA, Gattit M. 1982. Region-specific effects on chromosome integrity of mutations at essential loci in Drosophila melanogaster. Proc Natl Acad Sci U S A. 79:1205–1209.

Driscoll MO. 2012. Diseases Associated with Defective Responses to DNA Damage. Cold Spring Harb Perspect Biol.:1–26. doi:10.1101/cshperspect.a012773.

Gramates LS, Marygold SJ, dos Santos G, Urbano J-M, Antonazzo G, Matthews BB, Rey AJ, Tabone CJ, Crosby MA, Emmert DB, Falls K, Goodman JL, Hu Y, Ponting L, Schroeder AJ, Strelets VB, Thurmond J, Zhou P and the FlyBase Consortium. (2017) FlyBase at 25: looking to the future. Nucleic Acids Res. 45(D1):D663-D671

Hales KG, Korey CA, Larracuente AM, Roberts DM. Genetics on the Fly: A Primer on the Drosophila Model System. Genetics. 2015 [accessed 2019 Jan 16];201:815–842. doi: 10.1534/genetics.115.183392

Laurencon A, Orme C, Peters H, Christina Boulton, Vladar E, Langley S, Bakis E, Harris D, Harris N, Wayson S, et al. 2004. A Large-Scale Screen for Mutagen-Sensitive Loci in Drosophila. Genetics 167:217–231.

Madabhushi R, Pan L, Tsai L. 2014. DNA Damage and Its Links to Neurodegeneration. Neuron. 83:266–282. doi:10.1016/j.neuron.2014.06.034.

Mason JM, Green MM, Shaw KES, Boyd JB. 1981. Genetic Analysis of X-linked Mutagen-Sensitive Mutants of Drosophila melanogaster. Mutat Res. 81:329–343.

Nguyen TD, Green MM, Boyd JB. 1978. Isolation of Two X-linked Mutants in Drosophila melanogaster Which are sensitive to gamma-rays. Mutat Res. 49:139–143.

Sekelsky J. 2017. DNA repair in Drosophila: Mutagens, models, and missing genes. Genetics. 205:471–490. doi:10.1534/genetics.116.186759.

Smith PD. 1976. Mutagen Sensitivity of Drosophila melanogaster iii. X-linked Loci Governing Sensitivity to Methyl Methanesulfonate. Mol Gen Genet MGG. 149:73–85.

# Brazil's Family Health Strategy:
## An Examination of the Experience of Community Health Workers and their Impact on the Commonwealth

Ximena Perez-Velazco
Andiara Schwingel, Ph.D. (Mentor)

University of Illinois
Department of Kinesiology and Community Health

## ABSTRACT

This study explores the experience of community health workers—front line public health workers—who provide low-level health intervention as they are integrated into multidisciplinary teams of health professionals, under the constitution of Brazil's Family Health strategy, a policy established in order to provide universal primary care in Brazil. Furthermore, this research looks into how the community health workers' role in bridging the gap between the public health efforts and the commonwealth initiates health literacy and health practices within the community and the CHWs themselves. There is little to no research on the subject of community health workers' physical or mental health, nor the position's influence of these factors. This study will assess the influence of community health workers' professional practices, education and culturally tailored education intervention programs like the AGITA program, on the individuals who actively work to implement health community and family orientation in their own society. Participants (n = 8) were recruited through working with the municipality and completed paper and pencil surveys in Portuguese. Data analysis utilized content analysis to identify themes. This study serves to analyze the behavior portrayed by community health workers and the potential shifts in their professional and personal practices related to physical and mental health resulting from their inclusion in establishing a sustainable delivery in health education and practices to local communities.

## INTRODUCTION
### The Brazilian Family Health Strategy

Brazil, a country that is considered home to nearly 1.9 million people and ranks as the fifth largest nation in the world, implements several goal-orientated federal programs as a way of providing a safe and profiting environment for its citizens (Wadge.) One of these goals, as a part of the provision of universal health care—which was authorized by the Alma – Ata declaration in 1978 and the 1988 constitution—is the promotion of a health system that, through primary health care, can provide multidisciplinary and equitable health care services. The country began to approach this goal in 1994 when the Brazilian Health System or Systema Unitaria de Salud (SUS), whose mission is to formulate health policy to provide integrated primary care, established a program known as the Family Health Strategy (FHS). The FHS is aimed at reducing costly hospital care while providing better access to health care with the help of its seemingly most influential program, the implementation of community health workers (CHWs) (Wadge.) The strategy's approach towards providing preventive and basic health care included creating and promoting multidisciplinary professional teams known as core teams, usually consisting of a physician, a nurse, and six CHWs. As a part of establishing multidisciplinary teams, the FHS also included health professionals like dentists, psychologists and pharmacists who are designated to assist groups of four or five health teams that provide additional specialty care. Each core team is assigned a geographic area covering 3,000 to 4,000 people, with a maximum of 150 families per CHW (Wadge.)

## Community Health Workers

CHWs, who are most often local members of the community, are frontline public health workers who serve to help communities with low-level health related problems and chronic disease intervention. The scope of practice within primary health for CHWs varies with geographic distribution; however, CHWs most often provide comprehensive care through health promoting, preventive, and rehabilitative services. Furthermore, CHWs are also expected to encourage and empower their communities as a part of their integrated efforts, as well as provide the members of their community with resources and the education to connect them with the countries' formal health system (Uauy.) Community health workers most often work in their own residential areas, which serves as their designated micro area, in which they are each assigned approximately 150 homes to visit once a month (Wadge.) These visits occur irrespective of need or demand, and inspect the home for risk factors and offer their promotional health services, including providing general health education and regulating a medical prescription (Macinko.)

Since the establishment of the program in 1994, community health workers have served at the center of the primary health care policy in Brazil. Research shows that that the FHS, as of 2015, provides services to 58% of the country's municipalities, and is providing these services to 95% of citizens in each one, reaching almost 62% of Brazil's population (Paim.) Of this population, CHWs work to combat a high and increasing level of non-communicable diseases, including hypertension and diabetes. Other persistent health challenges include the overuse of secondary and tertiary medical services, like medications, and challenges in the field of reproductive health, including the use of unsafe abortion, high rates of adolescent pregnancy, and high rates of mother-to-child transmission of sexually transmitted infections. Because of this, CHWs prioritize vulnerable populations, such as children and pregnant women (Paim.)

To date, CHWs receive one month of a semi-structured educational program in preparation for their employment (Spector.) A 2011 study stated that the training of CHAs is conducted at the national Ministry of Health (MOH), but the training curriculum is approved by the Ministry of Education. Nurses provide 8 weeks of formal didactic training at regional health schools. Following this, CHAs receive 4 weeks of supervised field training. CHAs also receive monthly and quarterly ongoing training (Aonso.)

## The History and Economics of the Family Health Strategy

The Family Health Strategy began as a form of establishing a more regulation provision of primary care, which has become devalued in the 1900's, as a result of the countries' growing dependency on secondary and tertiary care (Brazil's FHS.) The budget for the Family Health Strategy is entirely publicly funded and has multiplied six-fold since a rise in use thirteen years ago. The insurance of a structured and growing public health system has taken priority in Brazil; so much so that a law has been set in place to protect the public health care system from budget cuts or removals (Mendes.)

## Evidence of Impact

The benefits of the provision of community health workers has reduced the price of health care since the program costs $50 per person each year in comparison to much higher costly hospital services (Alonso.) The implementation of this program has reduced pressure often placed on more-expensive care providers and has led to significant improvements in national health demographics—reducing hospitalizations and mortality and improving equity and access (Chronic non – communicable disease.)

## Challenges

The weaknesses behind this form of training includes the lack of a follow up class as the CHWs progress into their time as community workers, which limits the understanding of new and modern breakthroughs in the health field. Furthermore, a lack of formal training on the use of technology and the lack of certain medical equipment, including updates in technology used to measure blood pressure and measure heart rates, creates a large set back in the delivery of services by community health workers (Alonso.)

## Gaps in the Literature

The gaps in the literature include little to no research on the perspective or the experience of the community health worker. In addition, there has been limited structure in the educational and training process on behalf of the CHWs established by the FHS. The objective of this study is to examine in depth the role of community health workers in Brazil. In addition, another objective is to examine the feasibility of expanding the role of CHWs to lead interventions on chronic diseases prevention in the community and how the intervention of this program would fill the gaps in the literature on CHWs' physical and mental health practices. 200 community-dwelling men and women aged 50 and over were recruited to participate in the "AGITA" program, and eight CHWs were invited to deliver the program to the community. Quantitative and qualitative instruments addressed both individual and organizational aspects of behavioral change interventions. This culturally sensitive intervention targeted the population by partnering with local organizations to develop and deliver an evidence-based behavioral change curriculum that incorporates religious and family activities.

## THE RESEARCH QUESTION

What is the experience of individuals in their role of community health workers in Brazil?

## SUBSIDIARY QUESTION

How does the AGITA* program overcome the barriers present in community health workers' ability to combat chronic disease through the implementation of health education, from the perspective of the CHW?

## METHODS

Participants (n = 8) were recruited through working with the municipality and completed paper and pencil surveys in Portuguese. Data analysis utilized content analysis to identify themes. The study design included a semi-structured interview guide that was designed specifically for this project.

Participants included community health workers (n=8) who provided feedback regarding the six-month pilot program in which questionnaires were transcribed verbatim and analyzed using content analysis. Once IRB approval was obtained by the University of Illinois, the collection of data began. Prior to conducting interviews, there was a thorough explanation of the process and written consent was obtained. On an assented basis, interviews were conducted onsite at the clinic during clinical hours that were most convenient for the provider (this usually took place during the provider's lunch hour.) Each interview was recorded and followed by a verbatim transcription. The transcriptions were then analyzed for pressing themes including barriers, limitations and benefits of including the onsite CHW. These significant themes were broken down into subheading and placed into charts to organize them by relevance.

## RESULTS

The database search yielded 497 results; of these, 9 articles included information about the profession of community health workers within the Family Health Strategy. 1 of these articles described the profession from the perspective of the community health workers. Within these nine studies, the following themes were included when identifying pressing themes: Health Demographics, Policy, Professional Practice, Mental Health and Physical Health. Factors of physical health that were considered include the individual application of health behaviors promoted by the Brazilian Family Health Strategy. Perceptions of mental health included confidence in job performance, satisfaction with job, and their sense of self-importance in the role. Most articles discussed the growth of the Brazilian Family Health Strategy and its adoption by other countries. Research studies were conducted within the years 2007 and 2018. The research studies were conducted through the use of cross-sectional studies/surveys, comprehensive studies, systematic review and meta-analysis and placed into a comprehensive table (Table 1[1].)

---

[1] See https://digitalcommons.winthrop.edu/wmrb/ to enlarge Table 1 electronically.

**Table 1: Systematic Review of Literature Including Pressing Themes**

| Authors | Country | Setting | Data | Sample Size | Data Structure | Sample | Policy | Professional Practice | Mental Health | Physical Health |
|---|---|---|---|---|---|---|---|---|---|---|
| Andrade et al.; 2018 | England | Comm-unity | This article examines factors associated with the implementation and expansion of the FHS. | n=5419 | The proportion of the municipal population covered by the FHS over time was assessed using a longitudinal multilevel model for change that accounted for variables covering eight domains: economic development, healthcare supply, healthcare needs/access, availability of other sources of healthcare, political context, geographical isolation, regional characteristics and population size. | Brazilian municipalities; During the 15-year study period, national coverage of the FHS increased from 4.4% to 54%, with 58% of the municipalities having population coverage of 95% or more, and municipalities that had not adopted the program decreased from 86.4% to 4.9%. | Yes | Yes | No | Yes |
| Alonso et al.; 2018 | Brazil | Comm-unity | This article examines the analysis of the evidence from qualitative studies that addresses the perception of Brazilian community health agents about their work. | n=33 | The strategy was constructed by crossing descriptors, using the Boolean operator "AND," and filtering, which resulted in 129 identified articles. We removed quantitative or qualitative research articles, essays, debates, literature reviews, reports of experiences, and research that did not include Brazilian Community Health Agents as subjects. | | Yes | Yes | Yes | No |
| Macinko; 2007 | USA | Comm-unity | This research examines the structure and emergence of the Sistema Unica de saude in Brazil. | | Data was obtained using the up to date individual and household information obtained by CHWs when working with patients. | This is a descriptive study at the national level, based on secondary data from the Brazilian Institute of Geography and Statistics (IBGE) and the Ministry of Health, with the reference period being the historical series from 1999 to 2009. | Yes | No | No | No |
| Mendes; 2007 | Brazil | Comm-unity | This paper assesses inpatient and outpatient care and their capacity to respond to changing demands in the context of the demographic transition in Brazil. | | The data were obtained from studies by the Brazilian Institute of Geography and Statistics (IBGE) and databases in the National Health System (CNES, SIH, and SIA). The reduction in birth, fertility, and infant mortality rates and the increase in life expectancy at birth are still driving population growth, while decreasing the dependency rate, thereby providing the opportunity to make necessary adjustments. | This is a descriptive study at the national level, based on secondary data from the Brazilian Institute of Geography and Statistics (IBGE) and the Ministry of Health, with the reference period being the historical series from 1999 to 2009. | Yes | Yes | No | No |

**Table 1: Systematic Review of Literature Including Pressing Themes, Continued**

| Authors | Country | Setting | Data | Sample Size | Data Structure | Sample | Policy | Professional Practice | Mental Health | Physical Health |
|---|---|---|---|---|---|---|---|---|---|---|
| Paim; 2011 | USA | Comm-unity | This research serves to show how the SUS has vastly increased access to health care for a substantial proportion of the Brazilian population, achieved universal coverage of vaccination and prenatal care, enhanced public awareness of health as a citizen's right. | n=120 | The data were obtained from studies by the Brazilian Institute of Geography and Statistics (IBGE) and databases in the National Health System (CNES, SIH, and SIA). | The data in this report included 120 articles on the structure of Brazil's primary health care sites. | Yes | No | Yes | Yes |
| Spector; 2015 | USA | Comm-unity | Guided by social cognitive theory, this study examines factors associated with ESF workers' provision of drug use services. This study was based upon pilot work that included qualitative interviews with providers and stakeholders in the ESF. | | Cross-sectional surveys were collected from 262 ESF workers (168 CHWs, 62 nurses, and 32 physicians) in Mesquita, Rio de Janeiro State and Santa Luzia, Minas Gerais State. Outcome variable: provision of drug-use services. | Cross-sectional surveys were collected from 262 ESF workers. | Yes | Yes | Yes | No |
| Schmidt; 2011 | Brazil | Comm-unity | This article was a part of a six part study examining the health disparities in Brazil; including chronic disease and intervention. | | | Systematic review of the health demographics collected from Brazil 2007-2010 public health records. | Yes | No | No | Yes |
| Uauy; 2011 | Chile | Comm-unity | Investing in physical infrastructure (roads, bridges, factories) was necessary for social progress; countries should accumulate wealth before they could afford the provision of health, education, and other benefits to lower-income groups, and cheap labor was considered "not so bad." | | | | No | Yes | No | No |
| Wage; 2016 | England | Comm-unity | This case study is the first in a series examining health care innovations in low- and middle-income countries that could help address challenges faced by the U.S. health system and Brazil's Family Health Strategy (FHS), which focuses on the use of CHWs. Health care is a universal right in Brazil, authorized by the Alma–Ata Declaration in 1978 and the 1988 constitution. | n=67% of the Brazilian population (17,225) | Data was collected from the Brazilian census; including demographics from 1999 to 2002+J14 | Countries around the world, including the United States, are looking to reduce costs and provide greater access to care | Yes | No | Yes | No |

## DISCUSSION

The results indicate that in regard to The Family Health Strategy, specifically the use of community health workers as the preferred form of primary health care delivery, there is limited understanding on the subject of community health workers' mental and physical health, and how these factors influence their ability to satisfy their job requirements, as a part of multidisciplinary health teams. A stronger understanding of personal health practices among CHWs would allow for a stronger comprehension of the most successful form of health education.

## REFERENCES

Alonso, C. M. do C., Béguin, P. D., & Duarte, F. J. D. C. M. (2018). Work of community health agents in the Family Health Strategy: meta-synthesis. *Revista de Saúde Pública*, *52*, 14. https://doi.org/10.11606/S1518-8787.2018052000395

Brazil's Family Health Strategy: factors associated with program uptake and coverage expansion over 15 years (1998-2012). (2012).

Chronic non-communicable diseases in Brazil: burden and current challenges. (2011). The Lancet. https://doi.org/10.1016/S0140-6736(11)60135-9

Macinko J, Harris MJ. Brazil's family health strategy—delivering community-based primary care in a universal health system. New England Journal of Medicine. 2015 Jun 4;372(23):2177-81.

Mendes, A. da C. G., Sá, D. A. de, Miranda, G. M. D., Lyra, T. M., & Tavares, R. A. W. (2012). Assistência pública de saúde no contexto da transição demográfica brasileira: exigências atuais e futuras. *Cadernos de Saúde Pública*, *28*(5), 955–964. https://doi.org/10.1590/S0102-311X2012000500014

Paim, J., Travassos, C., Almeida, C., Bahia, L., & MacInko, J. (2011). The Brazilian health system: History, advances, and challenges. *The Lancet*, *377*(9779), 1778–1797. https://doi.org/10.1016/S0140-6736(11)60054-8

Spector, A. Y., Pinto, R. M., Rahman, R., & da Fonseca, A. (2015). Implementation of Brazil's "family health strategy": Factors associated with community health workers', nurses', and physicians' delivery of drug use services. *International Journal of Drug Policy*, *26*(5), 509–515. https://doi.org/10.1016/j.drugpo.2014.12.005

Uauy, R. (2011). The impact of the Brazil experience in Latin America. *The Lancet*, *377*(9782), 1984–1986. https://doi.org/10.1016/S0140-6736(11)60437-6

Wadge, H., Bhatti, Y., Carter, A., Harris, M., Parston, G., & Darzi, A. (2016). Brazil's Family Health Strategy: Using Community Health Workers to Provide Primary Care. The Commonwealth Fund, 40 (December).

# A Look at Mentorship in a Structured Undergraduate Program

Ta'Niss Robinson
Darren Ritzer, Ph.D. (Mentor)

## ABSTRACT

From the great deal of research previously done in the area of mentorship, we know that it can be very valuable to individuals across all ages and fields. However, there has not been much research done on how mentorship affects undergraduate students while in a structured program. In this study, we examine aspects of mentorship in a structured undergraduate program from the perspectives of the undergraduate protégés. We aimed to look at what specific mentorship interaction protégés had with their mentors and what aspect of satisfaction protégés had with their mentors. The structured program was the Ronald E. McNair Scholars program, a scholarship program that provides support and resources for those who are first generation, low income, and underrepresented in higher education to conduct research in order to prepare for graduate studies. McNair Scholars are paired with mentors who guide them through their summer research experience. Thirteen current protégé McNair Scholars participated in an approximately ninety to ninety-five question Qualtrics survey assessing mentoring functions, satisfaction, and mentorship recommendations using four previously published surveys, researcher designed questions, and general demographic questions. Those surveys include the following: Mentoring Functions Questionnaire (MFQ-9) (Scandura & Ragins, 1993), Mentoring Role Instrument (Ragins & McFarlin, 1990), Satisfaction with Mentor Scale (Ragins & McFarlin, 1990), and Mentoring Functions Scale (Noe, 1988). These questionnaires included items that could be broken up into 14 different categories including the following: sponsor, acceptance, challenge, coaching, counseling, friendship, psychosocial support, protect, exposure, role modeling, social, parent, career support, and satisfaction. After running a frequency analysis, we found that a higher percentage of protégés did not view their mentors as parents or friends, but a high percentage were still highly satisfied with their mentoring relationship. The data led us to believe that protégés seemed to appreciate career support and guidance rather than social friendships. This study did have limitations such as a small sample size. Further research could aim to obtain a larger sample size and collect data from not only protégés, but also their mentors.

## LITERATURE REVIEW

There have been multiple studies done throughout the years on mentorship in regards to a protégé having a personal mentor. The idea of one having a mentor can be traced back to have a Greek origin through the stories told in Homer's the *Odyssey*. Gordon recaps of Homer's story that before the war, Odysseus left the guidance of his son to a trusted friend named Mentor (Shea, 1997). From that story, the term "mentor" has taken the meaning of one who can be trusted to advise. The term "mentor" for the purpose of this paper is being defined as an individual who has knowledge, experience, and expertise in a particular area that can be used to aid in the professional and even personal development of someone with less knowledge, experience, and expertise in that same area. Professional and personal development may be seen as advising, counseling, coaching, and promoting the development of the protégé (Chao, Walz, Gardner 1992). The term "protégé" will be defined as one who benefits under the personal direction of a mentor.

Previous research suggests that mentorship can have positive impacts on a protégé's success. Fagenson (1989) concluded in his study that those who have been mentored in their area of work seem to have better career satisfaction and success than those who were not mentored. Since then, there have been many studies that look at the impacts of mentoring in general or on mentoring programs in particular fields. This can be seen in studies on different

careers such as clinical and translational science (Dilmore et al., 2010), nursing students (Nowell, Norris, Mrklas, & White, 2017), and medical doctoral students (Stamm & Buddeberg-Fischer, 2011) for example. There have also been studies that look at the impact of mentorship in general or mentoring programs in demographic populations including black engineering Ph.D. students (McGee et al., 2016) and American Indian/Alaskan Natives in the STEM field (Windchief & Brown, 2017). Throughout the years of studies centered on mentorship, it can be seen that protégés benefit from having mentors compared to those who do not have any kind of mentor relationship.

Other focus areas of studies on mentorship look at how mentorship relationships occur (formally or informally) and the effects of those happenings. Formal mentorship relationships develop due to the specific assignment of a mentor to a protégé, most likely due to a program that encourages mentor guidance. An informal mentorship occurs when a pair comes together without a specific assignment from an outside advisor. Dilmore et al. (2010) completed a study on a formal mentoring program with trainees in clinical and translational science and inferred from their findings that the program provided career and psychosocial benefits that correlated with mentor satisfaction from the protégé. Seibert (1999) found in his study that those who had formal mentors while in their field had significantly higher job satisfaction than those who did not have a mentor. Noe (1988) also conducted a study on a formal mentor/protégé program for adult educators already in the workforce. His findings led him to infer that although formal mentors do provide career and psychosocial benefits to the protégée, protégés would benefit more from informal mentors (Noe, 1988). Janssen, van Vuuren, and de Jong (2014) also examined the effects of informal mentorship and found a positive correlation between career success and informal mentors among medical doctoral students. Ragins and Cotton (1999) looked at both formal and informal relationships among those already in the workforce and inferred those with informal mentors had higher correlations of satisfaction

with their mentors than those who had formal mentors. Whether formal or informal, mentorship does seem to have more benefits to those in their careers compared to those who do not have a mentor at all.

Most of the research looks at mentoring among those already in the work place. For example, Janssen, van Vuuren, and de Jong (2014) looked at relationships between high level supervisors and subordinates; Ragins and Cotton (1999) looked at those in the field of engineering, social work, and journalism; Seibert (1999) looked at workers in a Fortune 100 corporation; Noe (1988) conducted a study on a formal mentor/protégé program for adult educators; Malota (2017) examined Polish managers; and Matarazzo and Finkelstein (2015), in a longitudinal study, looked at those in the consumer goods work force. Much research has been done on mentorship once one has left his or her undergraduate studies as well.

Some researchers chose to look at those who were continuing education while in training programs or graduate studies, such as Dilmore, Rubio, Cohen, Seltzer, Switzer, Bryce & Kapoor (2010), who completed a study on formal mentoring programs on trainees in clinical and translational science; Nowell et. al (2017) looked at nursing students who had formal mentors; and Stamm and Buddeberg-Fischer (2011) studied medical doctoral students who had mentors, and also demographic populations including black engineering PhD students (McGee et al. 2016). Neither of the latter two studies specified if the students connected with their mentors formally or informally. All of these mentor relationships occurred while the students were in post undergraduate studies or trainings, but not yet in the work force.

Some researchers looked at mentorship relationships over a timespan. Chao, Walz, and Gardner (1992) conducted a longitudinal study on alumni of an institution looking at formal and informal mentorship relationships that suggest protégés believe their mentors have had a positive impact on their career and personal development. In their longitudinal study, Stamm and Buddeberg-Fischer (2011) concluded that their medical students attributed some of their success in their careers to the personal

advisement of a mentor. Matarazzo and Finkelstein (2015) also used longitudinal data to examine qualities of mentorship by looking at characteristics that may be beneficial when matching pairs; they concluded that similar basic characteristics of mentors and protégés can enhance the relationship in terms of protégés' success. Over time, it can be seen that mentors have a lasting impact on their protégés.

There have also been multiple studies that examine the motivation of why mentors choose to take protégés under their wings. One of Ragins and Scandura's (1999) key findings in their study that examined mentors' views on cost and benefits of mentoring suggest that those who had been a protégé previously are more likely to be willing to mentor someone else as opposed to those who have never had a mentor in their own lives. With a sample of Polish managers, Malota (2017) found that the managers mostly had intrinsic motivational factors when deciding to mentor others while in a formal programming setting. Janseen, van Vuuren, and de Jong (2014) looked at only informal mentor/protégé relationships of those in professional organizations and their motives and concluded five broader categories of motivation as an extension to the dichotomy of intrinsic versus extrinsic motivation. Those categories suggest motives for mentoring include that the mentors' motives were self-focused, protégé focused, relationship-focused, organizational-focused, and even unfocused (Janseen, van Vuuren, & de Jong, 2014). There can be many different reasons why and factors as to why some choose to mentor others.

As mentioned previously, there is much literature that examines many different aspects of mentorship; however, more can still be contributed to the literature. Most of the research looks at mentoring in organizations between high level supervisors and subordinates and while in their graduate career, but not at mentorship before people leave their undergraduate studies. There is also research done on motivating factors of why people choose to mentor, but not really much in depth qualitative data. The purpose of this study is to look at the multiple aspects of mentorship from the perspective of mentors and protégés that have been connected within

structured programs while in their undergraduate studies and to also examine what mentor qualities factor in as well.

## METHODS
### Participants

All participants have, at one point, been involved in the Ronald E. McNair Scholars program. These participants include those who are currently undergraduate students in the program, alumni of the program, currently a mentor of scholars in the program, or were once a mentor of scholars in the program. These four categories of people were asked to complete an approximately 90 question survey regarding mentorship in regards to functions, advice, and demographics. The sample consisted of 13 current program scholars.

### Measures

Those who indicated that they are a current protégé in the program, have been a protégé in the program previously, or is a past or present mentor to the program scholars were exposed to the following questions. Noe's (1988) 29 item scale was used with a 5 point scale ranging from 1= "to a very slight extent" to 5= "to a very large extent" to measure Mentoring Functions. Scandura and Ragins' (1993) 9 item scale, the Mentoring Functions Questionnaire (MFQ-9), was also used to measure mentoring functions. Ragins and McFarlin's (1990) 33 item Mentor Role Instrument, measured on a 7 point Likert scale ranging from 1= "strongly disagree" to 7= "strongly agree," was used to assess mentoring functions. We also used Ragins and McFarlin's (1990) 4-item Satisfaction with Mentor Scale to measure one's satisfaction for their mentors on a 7-point Likert scale. Some of the items were adjusted to fit the context depending on the whether the survey went to one who had only ever been a protégé in the McNair program, or a faculty member who has been a protégé and a mentor at least once in their life. Additional open-ended questions generated by the authors were also asked. Those who indicated that they are current or past scholars of the program were asked additional open-ended questions. Examples of a question would be "what advice would you give to someone who is looking for a mentor?" and what their major

is/was while in the program. Those who indicated that they are faculty mentors were asked open-ended questions such as "what advice do you have for someone who wants to or is going to be a mentor in the program?," what their area of concentration is, and how many years they have been serving as a mentor in the program. Additional demographic questions such as race, gender, and program region were asked of everyone.

## RESULTS

In this study, the items were in put into categories based on what aspect of mentorship they represented. There were fourteen categories including the following: sponsor, acceptance, challenge, coaching, counseling, friendship, psychosocial support, protect, exposure, role modeling, social, parent, career support, and satisfaction. We looked at the five categories of mentorship that had over 50% of participants either strongly agree and agree as well as strongly disagree and disagree with items. These five categories of mentorship include the following: social, parent, career support, role model, and satisfaction.

A sample of the results revealed that the majority of scholars (81%) were highly satisfied with their mentoring relationship. A frequency analysis revealed that a higher percentage of protégés viewed their mentors as role models rather than as parent figures or friends. Fifty-four percent of protégés specifically reported that they did not view their mentors as parents, and 64.1% of protégés did not interact with their mentors socially outside of research. Additionally, 71.2% of protégés viewed their mentors positively as role models, and 61.6% agreed that they received career support from their mentors. Refer to Figure 1 and Figure 2 for a visual representation of the data.
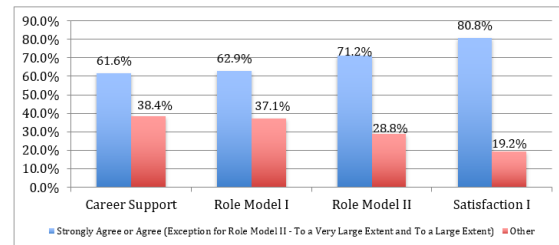


*Figure 1.* Participants who strongly agree or agree
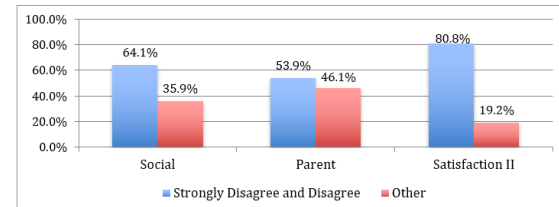


*Figure 2.* Participants who strongly disagree or disagree

We also included an open-ended question in our survey with the prompt "what advice would you give to someone who is looking for a mentor." Examples of responses are "Your mentor should be someone you have a close relationship with and also someone who has your best interest at heart;" "I don't think you need to be best friends with your mentor…It is important that there is respect, trust, and a desire to advance your academic achievement…its an added bonus if your mentor is a pretty cool person;" "Choose a mentor that respects you as a person and someone that can guide your professional development."

## DISCUSSION

In sum, our data led us to believe that protégés appreciate professional guidance from their mentors rather than social friendships. Undergraduate protégés are not looking to replace their parents, but instead, seem to desire mentors who can help them prepare for their careers and transition to being young professionals. These findings are noteworthy because the McNair Scholars in our study were able to request their mentors to be formally paired with; instead of seeking the most comfortable social relationships, the Scholars seem to have prioritized preparation for the future when picking a mentor. Such knowledge

might be beneficial to those who want to mentor in the future or want to know specifically what aspects of mentorship may be more valued by those being mentored.

## REFERENCES

Chao, G. T., Walz, P. M., & Gardner, P. D. (1992). Formal and informal mentorships: A comparison on mentoring functions and contrast with nonmentored counterparts. *Personnel Psychology*, *45*(3), 619-636. doi:10.1111/j.1744-6570.1992.tb00863.x

Dilmore, T. C., Rubio, D. M., Cohen, E., Seltzer, D., Switzer, G. E., Bryce, C., … Kapoor, W. N. (2010). Psychometric Properties of the Mentor Role Instrument when Used in an Academic Medicine Setting. *Clinical and Translational Science*, *3*(3), 104–108. http://doi.org/10.1111/j.1752-8062.2010.00196.x

Fagenson, E. A. (1989). The mentor advantage: Perceived career/job experiences of proteges versus non-proteges. *Journal Of Organizational Behavior*, *10*(4), 309-320. doi:10.1002/job.4030100403

Janssen, S., van Vuuren, M., & de Jong, M. D. (2014). Motives to mentor: Self-focused, protégé-focused, relationship-focused, organization-focused, and unfocused motives. *Journal Of Vocational Behavior*, *85*(3), 266-275. doi:10.1016/j.jvb.2014.08.002

Matarazzo, K. L., & Finkelstein, L. M. (2015). Formal mentorships: Examining objective-setting, event participation and experience. *Journal Of Managerial Psychology*, *30*(6), 675-691. doi:10.1108/JMP-02-2012-0041

Małota, W. (2017). Motivational Factors to be a Mentor in Formal Mentoring in Organisations. The Role of Intrinsic and Extrinsic Motivation in the Propensity to Mentor. *Journal Of Management & Business Administration. Central Europe*, *25*(4), 119-143. doi:10.7206/jmba.ce.2450-7814.210

McGee, E. O., White, D. T., Jenkins, A. T., Houston, S., Bentley, L. C., Smith, W. J., & Robinson, W. H. (2016). Black engineering students' motivation for PhD attainment: Passion plus purpose. *Journal For Multicultural Education*, *10*(2), 167-193. doi:10.1108/JME-01-2016-0007

Noe, R. A. (1988). An investigation of the determinants of successful assigned mentoring relationships. *Personnel Psychology*, *41*(3), 457-479. doi:10.1111/j.1744-6570.1988.tb00638.x

Nowell, L., Norris, J. M., Mrklas, K., & White, D. E. (2017). A literature review of mentorship programs in academic nursing. *Journal Of Professional Nursing*, *33*(5), 334-344. doi:10.1016/j.profnurs.2017.02.007

Ragins, B. R., & Cotton, J. L. (1999). Mentor functions and outcomes: A comparison of men and women in formal and informal mentoring relationships. *Journal Of Applied Psychology*, *84*(4), 529-550. doi:10.1037/0021-9010.84.4.529

Ragins, B. R., & McFarlin, D. B. (1990). Perceptions of mentor roles in cross-gender mentoring relationships. *Journal Of Vocational Behavior*, *37*(3), 321-339. doi:10.1016/0001-8791(90)90048-7

Scandura, T. A., & Ragins, B. R. (1993). The effects of sex and gender role orientation on mentorship in male-dominated occupations. *Journal of vocational behavior*, *43*(3), 251-265.

Seibert, S. (1999). The effectiveness of facilitated mentoring: A longitudinal quasi-experiment. *Journal Of Vocational Behavior*, *54*(3), 483-502. doi:10.1006/jvbe.1998.1676

Shea, G. F. (1997). *Mentoring: A practical guide*. Menlo Park, Ca: Crisp Publications.

Stamm, M., & Buddeberg-Fischer, B. (2011). The impact of mentoring during postgraduate training on doctors' career success. *Medical education*, *45*(5), 488-496.

Windchief, S., & Brown, B. (2017). Conceptualizing a mentoring program for American Indian/Alaska Native students in the STEM fields: a review of the literature. *Mentoring & Tutoring: Partnership In Learning*, *25*(3), 329-345. doi:10.1080/13611267.2017.1364815

# Familial and Community Influences on the Sports Socialization of Black Boys: A Case Study

Timothy Smith
Adrienne Edwards, Ph.D., CFLE (Mentor)

## ABSTRACT

From an early age, many children are engaged in or connected to various sporting activities. In a recent study, the Aspen Institute (2018) reported that 61.1% of males between the ages of six and 12 had played a team sport at least one day in 2016. Statistical data on racial differences and child involvement in sport activities is sparse. However, while the research on Black sports socialization is limited, Stodolska, Shinew, Floyd, and Walker (2014) were able to link Black sport involvement to cultural and gendered forms of socialization, which is often perpetuated through interpersonal relationships and interactions. Despite the prevalence of Black boys participating in sports, the research on their sport socialization is limited. The purpose of this study is twofold; (1) To examine the nuances of how parents and community agents integrate racial socialization and gendered socialization during interactions with young Black boys, and (2) how that socialization influences young Black boys' perceptions of the importance of playing sports. To investigate these questions, Black boys, their parents, and community agents were interviewed to see what external influences in a Black boy's life played a role in his sport socialization. Literature shows that interpersonal relationships can influence physical activity by providing social support and establishing social norms that constrain or enable health promoting behaviors.

## INTRODUCTION

Over the years, the development and outcomes of the socialization of sports, race, and gender have been examined for various racial and ethnic minority groups in the United States. For example, The Journal of Sport and Exercise Psychology published an article by Fredericks and Eccles (2005) that discussed Family Socialization, Gender, and Sport Motivation and Involvement. This study used analytic techniques to test the hypothesis that role modeling, parents' beliefs, and the provision of experiences for the child are related to children's perceptions of sport competence, value, and participation. Additionally, gender differences in sport participation rates are linked most directly to gender differences in competence and value beliefs, which in turn are assumed to derive from experiences in the home and elsewhere. Similar to this study, theoretical and empirical bodies of literature have focused on socialization as a very important aspect of human development, but researchers have not examined these instances equally for all populations within the United States. The examination of socialization in terms of sports, race, gender, and racial identity seems to be particularly relevant to Black communities because of their histories, the adversities that they have overcome, and the diverse circumstances that ethnically diverse populations face (2005). However, there has been little research conducted on Black communities in terms of the internal socialization that occurs within the black community. This lack of research is especially visible within the studies of Black child development. There has been some studies on the socialization of the Black children, but none of them have extensively looked at all of these factors in conjunction with one another. This research study will address that gap in the literature. More specifically, this study will further advance the research of the socialization of Black Boys by investigating how familial and community influences impact their decisions to participate in a sport.

## REVIEW OF THE LITERATURE
### Racial Socialization

Over the past several decades, researchers examined racial socialization or how

parents shape children's learning about their own race and about relations between ethnic groups. Hughes and Johnson (2001), found that parents' race-related communications to children have been viewed as important determinants of children's race related attitudes and beliefs, and their sense of efficacy in negotiating the race related barriers and experiences. This could be primarily attributed to the fact that racism is still a prevalent factor within the United States and the parents would like to condition their children for the adversity and discrimination that is sure to come (2001). Furthermore, Hughes and Johnson emphasize the complex interplay between African American parents' recognition of their disadvantaged position in the United States in their normative goals for the children. Given the state of race relations in America, this racial socialization could be a coping mechanism to brace their children for events that may happen. For instance, Hughes and Johnson (2001) mention that verbal, nonverbal, deliberate, and unintentional parental messages to children transmit information regarding cultural pride awareness of racism and cultural practices.

Hughes and Johnson (2001), found that children whose parents emphasize their parent's ethnic or racial groups, culture history, and heritage have reported higher self-esteem more knowledge about the ethnic group, and more favorable in group activities (2001). These transmissions of both implicit and explicit messages about the meanings of one's race in a broader societal context will grow into how the child gains a sense of understanding for the cultural, traditional, and racial identities in which they hold (Yang et al., 2016). According to Hughes and Chen (1997), this pattern is attributed to the fact that the goals of racial and cultural socialization practices are to instill a sense of racial pride and cultural knowledge in children. Evidence exists that adolescents whose parents engaged in more cultural socialization have a greater tendency to question allegiance to the dominant culture's worldview of African-Americans, express greater appreciation for African-American culture, and manifest a stronger and more positive orientation to African-Americans in their culture (Yang et al.,

2016). This has proven to be effective because parents' efforts to prepare children for racial barriers have also been associated with favorable youth outcomes including higher grades, and feelings of efficacy (Yang et al., 2016).

## Influences on Physical Activity

Regular physical activity is associated with important physical, mental, and social benefits. Participating in physical activity on a day- to-day basis is associated with better health outcomes (2011). Therefore, if children were to participate in physical activity on a regular basis, they would be more likely to have healthier lives when they are older. The likelihood for a child to want to participate in physical activities will increase depending on their surroundings. For example, research has shown us that the social environment may influence behavior in a number of ways, through socialization processes, social integration, interpersonal relationships, and social support (2011). Social influences are often understood within the context of social learning theory, whereby health-related behaviors are acquired and modified through observational learning and direct learning experiences involving interactions with significant others. Existing literature suggests that the pressure associated with peer and parent influences or support may lead some to feel obligated to participate in physical activities even if they originally had no desire to do so.

A range of social factors have been shown to be associated with physical activities amongst children and adolescents; these include parental physical activity, parental support, having physically active friends, peers and socializing, family cohesion, and child parent communication (2011). These interactions and conversations have been noted to increase the child's chances of participating in a physical activity. Another factor that could encourage a child to participate in a physical activity is positive reinforcement (2011). Kirby and colleagues (2011) mentioned how interpersonal relationships can influence social activity by providing social support in establishing social norms that constrain or enable health promoting behaviors. The provider of social support may have varying effects on physical activity among adolescents. Those who influence adolescents

tend to change overtime. Early in life, young people referred to their immediate family members to provide positive attitudes and behaviors, with parental influence having the greatest impact.

The articles reviewed indicated that the socialization of children, parental and peer support could influence the child's likelihood to participate in an activity. However, nothing was specified for the Black community. Given differences in cultural practices between the African American community and mainstream White America, the socialization of children is likely to be different as well (2008). Research studies should focus specifically on the interrelatedness of racial socialization and sport socialization among African American families to explain the influences that impact African American boys' decisions to participate in organized sports. The goal of this research is to examine the family and community factors in Black boys' lives that influence them to participate in sports. The purpose of this study is twofold: (1) To examine the nuances of how parents and community members integrate racial socialization and sports socialization during interactions with young Black boys, and (2) How that socialization influences young Black boys' decisions to play sports.

## METHODS

This research study analyzes how family and community members influence young Black boys' experiences of and their perceptions about the importance of playing a sport. This research design looks specifically at how and what parents and community members communicate about the importance of playing a sport to young Black boys.

### Research Design

This study was approved by the Institutional Review Board at Winthrop University. The case study analysis was completed by using multiple cases. Two Black boys and their families participated in the research study. Community agents who work directly with the boys were also included in the study sample to gain a more nuanced view of the process of sports socialization among young Black boys in a community setting. Snowball sampling techniques were used to recruit participants through local branches of the YMCA in York County, SC and Chester Park Center of Literacy Through Technology in Chester, SC. For example, an administrative contact at the school served as a liaison between the researcher and potential participants, and recommended families that met the eligibility criteria to the study. Additionally, participants who meet the study criteria will be asked to refer families that they know fit the criteria to participate in the study. The researcher also passed out flyers advertising the study to Black families who attend the YMCA and Chester Park C.O.L.T. Demographic information about children and parents will be obtained through use of a demographic questionnaire to be completed prior to gathering qualitative data. Parents will respond to the demographic questionnaire and will report on information about them and their children. This study will involve three interview protocols (i.e., a child interview, a parent interview, and a community agent interview). Probes will be used to elicit stories from participants to gain a deeper insight into the process of sports socialization among Black boys. All interviews will be audio recorded and transcribed immediately (Merriam 1998).

Transcripts of interview data were analyzed using qualitative thematic analysis (Saldana, 2016). Data collected for the interviews was coded in three phases: focused themes, subthemes, and major themes (Saldana, 2016). This helped the researcher identify similarities that emerge across all of the participant interviews to obtain a collective depiction of the sports socialization process. The data collected was coded in three phases: focused, major themes, and subthemes. The researcher also took analytic memos throughout the data collection and analysis stages of the project to record ideas about possible connections among participant responses and initial thoughts about codes and themes (Saldana, 2016). These additional memos served as another source of data for the study.

## DISCUSSION

The first major theme, sports socialization as a normative aspect of parenting,

captured how socializing young Black boys to become involved in sports happened naturally and instinctively for the parents in this study. Black boys were exposed to sports at an early age through intentional means such as parental structuring of sports activities and through the modeling of sports involvement by extended family members, in particular older cousins. Black fathers and extended family members who are men were more likely to be directly involved in the sports socialization of young boys. The second theme, reinforcing sports involvement, reflects how young Black boys are receiving positive reinforcement from their parents and communities for being involved in sports. Children were reinforced through pleasing parents and a lack of alternatives to being involved in sports in their communities, thereby leaving sports as an only option. Child involvement in sports was positively reinforced through community support for being successful at sports; further, community agents used sports-related activities as teaching tools to scaffold children and engage them in the learning process of academic skills. Black boys appear to be socialized to participate and be successful in sports from their families and their communities.

## REFERENCES

Crouter, A. C., Baril, M. E., Davis, K., & McHale, S. M. (2008, December 01). Processes Linking Social Class and Racial Socialization in African American Dual-Earner Families.

Diane Hughes & Lisa Chen (1997) When and What Parents Tell Children About Race: An Examination of Race-Related Socialization Among African American Families, Applied Developmental Science.

Hughes, D. and Johnson, D. (2001), Correlates in Children's Experiences of Parents' Racial Socialization Behaviors. Journal of Marriage and Family.

Kids Facts: Sports Participation Rates. (2018). Retrieved from https://www.aspenprojectplay.org/kids-sports-participation-rates

Kirby, J., Levin, K. A., & Inchley, J. (2011). Parental and Peer Influences on Physical Activity among Scottish Adolescents: A Longitudinal Study. *Journal of Physical Activity and Health,8*(6), 785-793.

Merriam, S. B. (1998). Qualitative research and case study applications in education. San Francisco: Jossey-Bass.

Saldaña, J. (2016). The coding manual for qualitative researchers (3rd ed.) Los Angeles: SAGE Publications.

Stodolska, M., Shinew, K. J., Floyd, M. F., & Walker, G. J. (2014). *Race, ethnicity, and leisure: Perspectives on research, theory, and practice*. Champaign, IL: Human Kinetics. p. 145-161).

Weiss, M.R., Fredricks, J. A., & Eccles, J. S. (2005). Parental Influences on Youth Involvement in Sports. In M. R. Weiss (Ed.), *Developmental sport and exercise psychology: A lifespan perspective* (pp. 145-164). Morgantown, WV, US: Fitness Information Technology.

# The Relationship between Nature Connectedness and Physical Activity Patterns in a Sample of Collegiate Students, Faculty, and Staff

Destinee Waddy
Tyrone Ceaser, Ph.D. (Mentor)

## ABSTRACT

PURPOSE: A strong relationship exists between physical activity (PA) and nature connectedness (NC); the most physically active individuals may also be the most nature connected. Designing PA programs and modifying college campuses through the lens of biophilia can provide a more logical, evidence-based approach to improve overall health and wellness. The purpose of this study was to identify the relationship between physical activity and nature connectedness in a sample of collegiate faculty and students. METHODS: Participants completed two previously validated surveys: The International Physical Activity Questionnaire and the Connectedness to Nature Survey. Demographic data (age, race, campus affiliation) were also collected. RESULTS: There were 82 participants total (male=18.8%, female= 81.2%). Participants reported a mean score of 2.39 on the NC scale. On average, participants accumulated 3330 minutes of weekly sedentary activity, 743 min of walking activity, 308 minutes of moderate activity, and 339 minutes of vigorous activity. Spearman correlations showed no correlation between NC and PA (vigorous, $p= .782$; moderate, $p= .577$; walking, $p= .374$; sitting, $p=.774$). CONCLUSION: College affiliates report an affinity for nature and high levels of PA. More studies are needed to determine additional variables that mediate the relationship between PA and NC in the collegiate setting.

## INTRODUCTION

Heart disease, obesity, and type II diabetes are among the leading causes of death in the United States. The prevalence of these diseases has continued to increase over the last several decades (Ogden et al., 2006). Being overweight and obese are two of the most common risk factors for cardiovascular disease (CVD), metabolic disease and type II diabetes (Mozaffarian et al., 2015). These morbidities not only impact the health and wellness of individuals from specific socioeconomic status, but also affect the collegiate population as well. Collegiate affiliates tend to be placed under high levels of stress. According to research from Harvard Medical School, college students have higher rates of involvement in negative, stressful events. In addition, mental health diagnoses such as anxiety disorders are higher within the college community and increase the risk for suicide (Younghans 2018). Taken together, there is a relationship between negative stressors and chronic disease (Schneiderman, Ironson, Siegel

2005). This relationship places collegiate affiliates at a higher morbidity risk. Students are allocating their time to academics and extracurriculars and aren't obtaining adequate levels of exercise and experiences of positive stress (e.g. eustress).

Increased levels of physical activity (PA) is associated with decreased risk of the aforementioned morbidities. Previous studies indicate a significant decline in PA as adolescents approach adulthood (i.e. their college years) (Calestine et.al. 2017). There is a lack of physical activity among the US population. However, there are guidelines in place to provide evidence on physical activity, fitness and overall health for Americans (ODPHP 2018). Leading health organizations such as the American College of Sports Medicine and The Centers for Disease Control and Prevention denote various activity levels to describe and define disease risk for children, adolescents, and adult individuals. According to the Office of Disease Prevention and Health Promotion, the various levels of PA are inactive, insufficiently active, active, and highly active. These levels are important in

determining if the individual incurs any health benefits for the given PA levels. In addition to total PA levels, PA can be further defined based on the pattern of activity intensity. There are three levels of physical activity intensity. These levels are low intensity, moderate intensity, and high intensity (ODPHP 2018). Intensity is determined by the metabolic equivalent of a task or MET, which is the amount of energy that is required to perform a task or activity. Between 40-60% of adults report no leisure time physical activity (LTPA), with a smaller percentage of non-Hispanic white men reporting no LTPA than most other groups (Ladabaum, 2012). Most adults spend their time in the low and moderate range for physical activity.

Looking at long-term physical activity behavioral interventions, researchers are focused on how to combat the decrease in physical activity among adults. There are interventions such as enhanced social support that help serve as mediators for individuals to increase their daily activity levels. Researchers have been studying these behavioral interventions, but we have not seen consistency with these models. There is a need for further research when it comes to using one's affinity of nature as a possible way to increase physical activity. Humans have an underlying need to feel connected with nature. According to Edward O. Wilson, humans have an innate tendency to connect with nature and other lifeforms. This urge is what connects humans to nature. Several studies have been done to connect biophilia to health and wellness. Researchers find that when an individual is connecting with nature, this improves their overall health and wellness. The presence of plants and green spaces has a subconscious, positive effect on the mind (Grinde and Patil 2009). When an individual isn't exposed to nature frequently, this can have adverse effects on mental health as well as create a disconnect from the natural environment. Connecting individuals to nature through biophilic design is helpful for those who have to stay indoors, but still need this connectedness. This is why it is important for collegiate affiliates to have this connection: with their busy work environments and being constantly under stress, biophilic design can play a role in preserving mental health and reducing stress (Heerwagen and Hase 2001). Through the biophilic hypothesis, researchers are trying to identify if the connection is strong enough to serve as a possible intervention for physical activity.

## METHODS

In attempt to identify nature connectedness and physical activity levels and patterns, 82 participants were voluntarily recruited to answer questions that described individual physical activity levels and connectedness with nature. Specifically, two questionnaires, the International Physical Activity Questionnaire (IPAQ) and the Connectedness to Nature Scale (CNS), were combined and sent out in a Qualtrics survey in the Winthrop University Qualtrics database system. After approval from the Winthrop University International Review Board, participants were chosen by word-of-mouth and email. Participants had to be a current Winthrop student, faculty or staff member. The survey also included demographic questions regarding age, race, gender, and university affiliation. The first portion of the survey then began with questions from the Connectedness to Nature Scale (CNS), then were followed by questions from the International Physical Activity Questionnaire (IPAQ). The surveys were analyzed through an SPSS Spearman Correlation.

### International Physical Activity Questionnaire

This is an internationally compatible questionnaire that can be used to gather health-related physical activity questions. This questionnaire is available in multiple languages, in a short or long version, and is self-administered or telephone administered. For this particular study, we focused on the self-administered, English, short version. This version consists of 3 categories, or levels, with 7 questions total. The first level is vigorous activity, the next is moderate activity and the last is low activity. Each question allows for subjects to record their physical activity levels within the last 7 days. The IPAQ assesses both physical activity levels and patterns. Questions have particular activity pattern descriptions such as heavy lifting, biking, and sitting.

## Connectedness to Nature Scale

The 13-question connectedness to nature scale consists of questions that can help identify how subjects generally feel about nature. This survey consists of questions such as "I think of the natural world as a community to which I belong," and "I feel that all inhabitants of earth, human and nonhuman, share a common "life-force." Nature connectedness is connecting humans to nonhuman forms around them. Understanding this connection can help determine if those with higher connections to nature also have higher physical activity levels and patterns. Following the collection of data, a spearman correlation was run to interpret significance and p-values.

## RESULTS

[**Figure 3**] There was a total of 82 participants (male=18.8%, female= 81.2%). There were more Caucasians (54.1%) than African Americans (43.5%). [**Figure 2**] A majority of the campus affiliates that participated were students (48.2%). [**Figure 1**] Participants reported a mean score of 2.39 on the NC scale. On average, participants accumulated 3330 minutes of weekly sedentary activity, 743 minutes of walking activity, 308 minutes of moderate activity, and 339 minutes of vigorous activity. Spearman correlations showed no correlation between NC and PA (vigorous, p= .782; moderate, p= .577; walking, p= .374; sitting, p=.774).

**Figure 2**
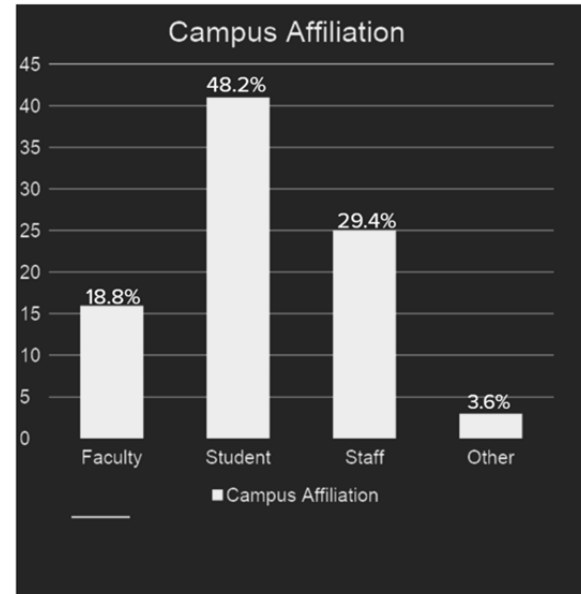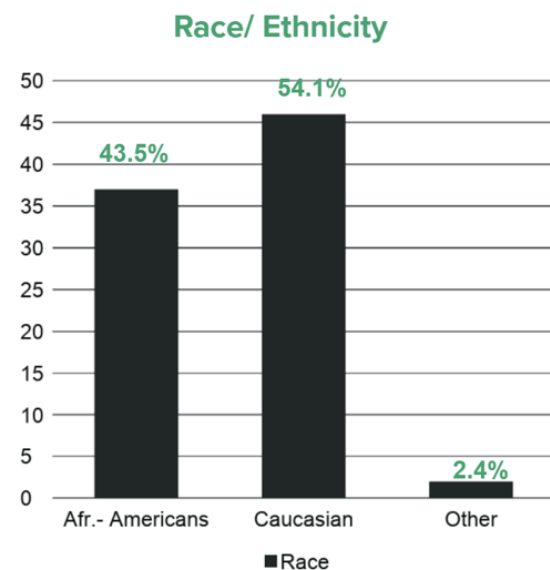
**Figure 1**

**Figure 3**

## CONCLUSION & DISCUSSION

College affiliates report an affinity for nature and high levels of PA, which may suggest the need for more biophilic spaces. Though there was not a significant relationship connecting physical activity levels and nature connectedness, college affiliates still reported high numbers on both NC and PA portions of the survey. More studies are needed to determine stronger relationships between PA and NC in the collegiate setting. The sample demographics are

representative of the population at Winthrop University. The amount of physical activity in a 7-day span are higher than the recommended guidelines for ACSM. About 150 minutes of moderate and 75 minutes of vigorous activity are the recommended guidelines. Some limitations of this study included sample size. Sample, though representative of the Winthrop University population, was not large enough to collect significant data. The time that the study was given was not an active season. Researchers hypothesize a stronger correlation between NC and PA if data was collected during a school year versus the summer. A stronger assessment of nature connectedness is also needed, so are questions that are more specific/easier read. Also, a collection of objective data such as an accelerometer to collect PA is needed because individuals tend to overreport PA levels subjectively.

## REFERENCES

Abu-Moghli, F. A., Khalaf, I. A., & Barghoti, F. F. (2010). The influence of a health education programme on healthy lifestyles and practices among university students. International Journal of Nursing Practice, 16(1), 35–42. https://doi.org/10.1111/j.1440-172X.2009.01801.x

Biophilic Design Case Studies - Terrapin Bright Green. (2015). Retrieved from https://www.terrapinbrightgreen.com/report/biophilic-design-case-studies/

Calestine, J., Bopp, M., Bopp, C. M., & Papalia, Z. (2017). College Student Work Habits are Related to Physical Activity and Fitness. International journal of exercise science, 10(7), 1009–1017.

Flegal, K. M., Carroll, M. D., Kit, B. K., & Ogden, C. L. (2012). Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999-2010. The Journal of American Medical Association, 307(5), 491–497.

Grinde, B., & Patil, G. G. (2009, September). Biophilia: Does visual contact with nature impact on health and well-being? International Journal of Environmental Research and Public Health. https://doi.org/10.3390/ijerph6092332

Heerwagen, J. H., & Hase, B. (2001). Building Biophilia: Connecting People to Nature in Building Design. Environmental Design and Construction, 3, 30–36. Retrieved from http://www.usgbc.org/Docs/Archive/External/Docs8543.pdf

Ladabaum, U., Mannalithara, A., Myer, P. A., & Singh, G. (2014). Obesity, abdominal obesity, physical activity, and caloric intake in US adults: 1988 to 2010. The American journal of medicine, 127(8), 717–727.e12. doi:10.1016/j.amjmed.2014.02.026

Mozaffarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, de Ferranti S, Després J-P, Fullerton HJ, Howard VJ, Huffman MD, Judd SE, Kissela BM, Lackland DT, Lichtman JH, Lisabeth LD, Liu S, Mackey RH, Matchar DB, McGuire DK, Mohler ER 3rd, Moy CS, Muntner P, Mussolino ME, Nasir K, Neumar RW, Nichol G, Palaniappan L, Pandey DK, Reeves MJ, Rodriguez CJ, Sorlie PD, Stein J, Towfighi A, Turan TN, Virani SS, Willey JZ, Woo D, Yeh RW, Turner MB; on behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2015 update: a report from the American Heart Association. Circulation. 2015;131:e29–e322.

Odphp (ed.). (2018). Part f. Chapter 6. All-cause mortality, cardiovascular mortality, and incident cardiovascular disease. Retrieved from https://health.gov/paguidelines/second-edition/

Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of Overweight and Obesity in the United States, 1999-2004. JAMA. 2006;295(13):1549–1555. doi:10.1001/jama.295.13.1549

Plotnikoff, R. C., Costigan, S. A., Williams, R. L., Hutchesson, M. J., Kennedy, S. G., Robards, S. L., … Germov, J. (2015). Effectiveness of interventions targeting physical activity, nutrition and healthy weight for university and college students: a systematic review and meta-analysis. International Journal of Behavioral Nutrition and Physical Activity, 12(1), 45.

https://doi.org/10.1186/s12966-015-0203-7

Ryan, C. O., Browning, W. D., Clancy, J. O., Andrews, S. L., & Kallianpurkar, N. B. (2014). Biophilic design patterns: Emerging nature-based parameters for health and well-being in the built environment. Archnet-IJAR. https://doi.org/10.26687/archnet-ijar.v8i2.436

Schneiderman, N., Ironson, G., & Siegel, S. D. (2005). Stress and health: psychological, behavioral, and biological determinants. *Annual review of clinical psychology*, *1*, 607–628. doi:10.1146/annurev.clinpsy.1.102803.144141

Wilson, EO. Biophilia; Harvard University Press: Cambridge, MA, USA, 1984.

Younghans, J. (2018, September 10). College Stress. Retrieved from https://hms.harvard.edu/news/college-stress

# Acknowledgments

**The Winthrop McNair Scholars Program** prepares first generation, low-income, and underrepresented undergraduates to be successful in PhD programs through a variety of resources and supports including research experience, workshops, graduate admissions and financial aid assistance, test preparation, and travel to present research and explore graduate programs. The program began in fall 2009 with its first federal grant.

Winthrop's program is funded through 2023 by a 5-year renewable TRiO grant from the U.S. Department of Education (PR/Award No.: P217A170094). $242,136 in annual federal funds helps 30 eligible, outstanding students complete research and prepare for graduate study. This year, federal funds represent approximately 72% of program costs. Winthrop and the Winthrop Foundation will contribute the remaining 28% of the budget with over $90,000 in cash and in-kind matches.

Winthrop's program is successful because of the excellent work and persistence of our Scholars; expertise of our Mentors; dedication of our staff; support from our Dean; funding from the U.S. Department of Education, our institution, and foundation; and guidance from our Advisory Board.

Each year, the Winthrop McNair Advisory Board selects new Scholars through a highly competitive application and interview process. All McNair Scholars complete intensive summer research internships, and several have earned awards for their work. See http://digitalcommons.winthrop.edu/mcnair/ for examples of our Scholars' research.

### 2018-2019 Winthrop McNair Advisory Board Members
- **Adolphus Belk, Ph.D.,** Professor of Political Science
- **Tyrone Ceaser, Ph.D.,** Assistant Professor of Exercise Science
- **Cheryl Fortner-Wood, Ph.D.,** McNair Director and Professor of Psychology (ex-Officio)
- **Victoria Frost, Ph.D.,** Assistant Professor of Biology
- **Rose Gray, M.A.,** TRiO Student Support Services (SSS) Director
- **Wenonah Haire, D.M.D.,** Executive Director, Catawba Cultural Preservation Project
- **Gloria Jones, Ph.D.,** Dean, University College (ex-Officio)
- **Willis Lewis, Ph.D.,** Associate Professor of Economic**s**
- **Karen Stock, Ph.D.,** Professor of Fine Arts
- **Takita Felder Sumter, Ph.D.,** Vice Provost for Faculty Affairs and Professor, Chemistry (ex-Officio)
- **Will Thacker, Ph.D.,** Professor of Computer Science (Fall 2019)
- **Nicki Washington, Ph.D.,** Associate Professor of Computer Science (2019)
- **Bradley Witzel, Ph.D.,** Professor of Education

For more information about Winthrop's program, visit *www.winthrop.edu/mcnair, http://digitalcommons.winthrop.edu/mcnair/,* or email mcnair@winthrop.edu.

### About the Artwork
The artwork on the cover was developed by our Executive Support Specialist, Mrs. Barb Yeager. It is adapted from a photograph of a pour painting she created using the colors in our program logo.