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# Relationship Between Race, Collectivistic/Individualistic Attitudes, Internet Addiction, and Nomophobia Among College Students

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Abstract

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## Abstract

Internet and social media misuse contributes to negative mental health outcomes among young adults. Because research suggests that cultural attitudes may influence Internet use, using Hofstede's cultural dimension theory as the foundation, the purpose of this study was to examine the extent to which race and collectivistic/individualistic cultural attitudes predict Internet addiction and nomophobia. The sample included 250 college students (140 Caucasian, 110 African American) between the ages of 18 and 22. Participants completed the Horizontal & Vertical Individualism Collectivism II scale, the Internet Addiction Test, and the Nomophobia Questionnaire. The results revealed that race was a predictor of Internet addiction with African American college students having higher levels of Internet addiction. Additionally, higher levels of horizontal individualism significantly predicted lower levels of Internet addiction, higher levels of vertical individualism predicted higher levels of Internet addiction, and vertical individualism and vertical collectivism were significant predictors of nomophobia. Students with higher levels of vertical individualism and vertical collectivism also showed higher levels of nomophobia. These results may lead to positive social change through the development of inclusive intervention and prevention resources for young college students at risk for Internet addiction and nomophobia.

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# Chapter 1: Introduction to the Study

Social media misuse and Internet addiction is a growing concern among young adults. U.S. teens have access to smartphones, and 45% report being online almost constantly (Anderson & Jiang, 2018). Social media is a platform in which one can share ideas, images, pictures, and opinions. These platforms have become a main source of communication, socialization, and current events (Ellison & Boyd, 2013). However, psychological problems have been found to be associated with problematic Internet use among young adults (Kim et al. 2019). The American Health Association (2016) reported that 52.7% of undergraduate students experience hopelessness, 67.3% loneliness, 61.9% experience overwhelming anxiety, and 39.1% depression that interferes with their ability to function. Further, smartphones provide instant access to the Internet, but interference with this accessibility can lead to an anxiety induced experience known as nomophobia. Nomophobia is a novel term describing the fear of being without one's mobile device. Though the term has yet to be classified as a disorder, research is growing on the symptoms and mental health implications of nomophobia (Anshari, 2019).

This study aimed to explore the relationship between race, cultural attitudes, social media use, and nomophobia among young adults. Race and cultural attitudes are rarely explored as predictors of Internet and smartphone use. Hofstead's (1980) collectivistic/individualistic theory holds that social systems exists because human behavior is not random but instead predictable when observing cultural perspectives. These cultural perspectives in turn influence behavior and communication (Trandis & Gelfand, 1998). Studies that have investigated the relationship between race and media

use found that European Americans (Whites) utilize the Internet for more individualist purposes while African Americans (Blacks) utilize social media for more collectivistic purposes (Flores, 2011; Murphy et al., 2016; Villanti et al., 2017). This study may lead to positive social change by aiding the development of inclusive intervention/prevention strategies related to problematic social media use applicable across many demographics.

This chapter summarizes the current research literature related to race, cultural attitudes, Internet use, and nomophobia. I also describe the gap in the literature, the relevance of the study, the purpose, research questions and hypotheses, the theoretical foundation, the nature of the study, the definitions of the variables, the assumptions, scope and delimitations, limitations, and significance.

## Background

Adolescence is a critical developmental period in which young adults begin to understand and construct their self-identity. The evolution of the smartphone has provided instant access to the Internet. Eighty-eight percent of young adults in the United States use some form of social networking sites; 81% use these platforms daily, and 95.7% consider them to be information sources (Kim et al., 2014; Rideout & Fox, 2018; Smith & Anderson, 2018). Simultaneously, mental health professionals report increases in negative mental health outcomes among this demographic (Karim et al, 2020). The literature supports the relationship between Internet misuse and negative mental health outcomes (Chin & Leung, 2018). Internet addiction refers to the degree to which Internet usage interrupts an individual's daily function, productivity, sleep, and emotional well-being (Young 1998). This dependence on technology may lead to nomophobia. Young

adults who experience nomophobia display characteristics such as social anxiety, introversion, low self-confidence, and finding it easier to socialize in a virtual environment as opposed to in person (Anshari et al., 2019).

Previous research has shown that cultural attitudes have a significant relationship with online behaviors (Chau et al., 2002; Karahanna, & Srite, 2006). Human behavior is often regarded as a biproduct of culture (Glenn, 2004). Culture shapes the environment people live in and therefore influences their behaviors. However, there is a lack of research examining the relationship between race, cultural attitudes, and media use among young adults. White Americans utilize social media for more individualistic purposes when compared to ethnic minorities (Flores, 2011). In contrast, Black Americans have been found to utilize social media for more collectivistic purposes (Murphy et al., 2016; Villanti et al., 2017). Understanding the relationship between race, cultural attitudes and Internet use may aid in the development of future preventative and intervention resources that are inclusive.

## Problem Statement

Ninety-seven percent of U.S. college students use the Internet and social media for communication and social networking purposes daily (Pew Research Center, 2021, Spies et al., 2014). Though many social networking sites use does not result in Internet addiction, for a proportion of people the Internet can become problematic or pathological to the point where it interferes with daily functioning, social relationships, and academic performance (Chen & Kim, 2013). A prevalence of psychopathologies and comorbidities, such as serious mental illness and suicide, increase significantly with Internet addiction

severity (Guo et al., 2019). Although not classified as a DSM-V disorder, Internet addiction has become widely accepted as a problem that may require professional treatment (Bickham, 2019). Mental health experts suggest that Internet addiction presents the same symptoms and consequences as those associated with substance abuse disorders (Kolaib et al., 2020) and those addicted to gambling (Greenfield, 2011). Internet addiction has been associated with various psychological problems, manifesting in adolescents as social withdrawal, loneliness, low motivation, and decreased academic performance (Chung et al., 2019).

Nomophobia is a specific anxiety type disorder caused by smartphone dependence (Anshari, 2019). The term is an acronym for no mobile phone phobia and is the fear of being unable to use or being unreachable through one's mobile (Yildirim & Correia, 2015). This phobia is a result of problematic mobile phone usage. Therefore, it is suggested to be listed as a situational phobia under specific phobias identified in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (American Psychiatric Association, 2013; Bragazzi et al., 2014). There are few studies on nomophobia, but the current literature supports a negative impact on psychological functioning (King et al., 2013).

The United States is considered an individualistic culture; however, research suggests that due to a history of racism, segregation, and institutionalized discrimination African Americans have developed collectivistic attitudes that emphasize interdependence and valuing of groups goals over individual goals (Gaines et al., 1997, Jones, 1997; Stephenson, 2004). In contrast, European American (White) history has

been shaped by the Western European origins of American settlers, who valued personal achievement, individuality and eventually autonomy from Great Britain (Baker & Carman, 2000). Though studies have looked at differences in Internet and smartphone use among Black and White individuals, none have done so from a cultural perspective. This study aimed to address this gap in the literature.

## Purpose of the Study

The purpose of this quantitative study was to determine the extent to which race (IV) and collectivistic/individualistic attitudes (IV) predict internet addiction (DV), and nomophobia (DV) among young college students. Findings from this research can increase understanding of the factors that predict Internet addiction and nomophobia. Findings may also support the creation of prevention and intervention resources that are applicable cross-culturally.

## Research Questions and Hypotheses

Research Question 1: To what extent does race and collectivistic/individualistic attitudes, as measured by the Horizontal & Vertical Individualism & Collectivism II scale, predict Internet addiction, as measured by Internet Addiction Test, while holding other predictors constant?

$H_0$1: Race and collectivistic/individualistic attitudes are not predictors of internet addiction.

$H_1$1: Race and collectivistic/individualistic attitudes are predictors of internet addiction.

Research Question 2: To what extent does race and collectivistic/individualistic

attitudes, as measured by Horizontal & Vertical Individualism & Collectivism II scale predict nomophobia, as measured by Nomophobia Questionnaire while holding other predictors constant?

$H_0$2: Race and collectivistic/individualistic attitudes are not predictors of nomophobia.

$H_1$2: Race and collectivistic/individualistic attitudes are predictors of nomophobia.

## Theoretical Foundation

Hofstede's (1980) cultural dimension theory provided the foundation for the study. This theory purports that cultural attitudes influence behavior. It was developed to understand specific aspects of cross-cultural communication. The theory consists of four dimesons through which cultural values can be analyzed (individualism-collectivism, uncertainty avoidance, power distance, and masculinity/femininity). The individualism/collectivism dimensions have been successful in describing cultural variations in attitudes, behaviors, and norms (Triandis,1996). People within individualistic cultures engage in behaviors motivated by personal reward, whereas people in collectivistic cultures engage in behaviors that are motivated by rewards that benefit their group. The individualism-collectivism dimensions have been used to distinguish Western and Eastern cultures and to explain individual attitudes and behaviors (Arpaci, 2015). The society in which this study was conducted is highly individualistic (United States), but the cultural variance among Black and White individuals may render the individualism/collectivism dimension of Hofstede's theory

appropriate for further understanding of how race and cultural perspectives influence Internet and smartphone use.

Hofstede's (1991) individualism/collectivism theory identified characteristics that could be used to distinguish cultural attitudes: vertical collectivism (VC), which is seeing the self as a part of a collective and being willing to accept hierarchy and inequality within that collective; vertical individualism (VI) is seeing the self as fully autonomous but recognizing that inequality will exists among individuals and accepting this inequality; horizontal collectivism (HC) is seeing the self as part of a collective but perceiving all members of the collective as equal; and horizontal individualism (HI) is seeing the self as fully autonomous and believing that equality between individuals is ideal. These dimensions have been established in the literature as a valid measure through which cultural attitudes can be measured (Trandis & Gelfand, 1998). For example, Acevedo (2003) investigated the nature of the relationship between ethnic identity, collectivism, and individualism among 154 undergraduate students from a Midwestern U.S. college. The results revealed that African Americans were more collectivistic than Europeans. In terms of overall cultural orientation, African Americans were found to be individualistic when compared to Europeans when not mediated by ethnic identity, suggesting an in-group identity when the objective is beneficial to group goals. These findings provide insight to differing cultural perspectives that may influence social media use among African Americans. Chapter 2 will provide a comprehensive review of the individualism/collectivism theory and justification for its use in the current study.

## Nature of the Study

The present study used a quantitative non-experimental survey design. Quantitative research is designed to identify numerical changes in a set of measurable characteristics within a population of interest (Salkind, 2010). This study examined the relationship between the predictor variables (race, horizontal collectivism, vertical collectivism, horizontal individualism, and vertical individualism) and outcome variables (Internet addiction, social media use, Internet addiction, and nomophobia) along a measurable continuum. These characteristics make a quantitative design appropriate. A nonexperimental design is used when the variables have already occurred and cannot be manipulated by the researcher (Salkind, 2010). The present study measured individual behaviors and characteristics that cannot be manipulated.

The target population was U.S. citizens who self-identified as either Black or White, were aged 18–22, and were enrolled in a 4-year undergraduate program in the United States at the time of the survey. The study was Internet based and used the Alchemer survey platform to collect data. The Horizontal & Vertical Individualism & Collectivism II (HVIC) scale was used to measure cultural attitudes among Black and White students in the United States. It distinguishes between four constructs of cultural orientation: horizontal (H), which emphasizes equality; vertical (V), which emphasizes hierarchy; individualism (I), which emphasizes independence; and collectivism (C), which emphasizes interdependence (Gelfand & Trandis, 1998). Many studies have utilized this scale to measure individualism and collectivism constructs (Chiou, 2011; Guo et al., 2008; Li & Aksoy, 2007; Soh & Leong, 2002). Standard multiple linear

regression was used to assess the relationship between the variables. This statistical test is appropriate as it provides a logical base for the association between two or more variables. Through these means each variable is assessed by what it offers to the prediction of the other variables entered in the model (Grant, 2021).

## Definitions

*Horizontal collectivism:* Entails seeing the self as part of a collective but perceiving all members of the collective as equal (Gelfand & Triandis, 1998).

*Horizontal individualism:* Entails seeing the self fully autonomous and believing that equality between individuals is ideal (Gelfand & Triandis, 1998).

*Internet addition:* The inability to control one's internet use to the extent that it leads to stress, anxiety, and impairment of daily activity (Young, 1998).

*Nomophobia:* An anxiety induced fear of being without one's mobile device or being unable to be reached on one's mobile device (Braggazi et al., 2014).

*Social media use:* A group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content *(*Kaplan, 2018).

*Vertical collectivism:* Entails seeing the self as a part of a collective and being willing to accept hierarchy and inequality within that collective (Gelfand & Triandis, 1998).

*Vertical individualism:* Entails seeing the self as fully autonomous but recognizing that inequality will exist among individuals and accepting this inequality (Gelfand & Triandis, 1998).

## Assumptions

It was assumed that participants would be able to recall and approximate their Internet use accurately. It was also assumed that participants would provide honest responses to the survey questions which was more likely by anonymous data collection. It was assumed that the theoretical reasoning for selecting the predictor variables were logically sound—specifically, race and individualism/collectivism attitudes are factors that influence media use, Internet addiction, and nomophobia. Lastly, it was assumed that participants responses would be reflective of how they would respond or communicate in real-world situations.

## Scope and Delimitations

The present study was designed to examine factors that may predict social media use, Internet addiction, and nomophobia among college students. Current literature suggests that college campuses in the United States are experiencing a mental health crisis. This was the reasoning behind targeting the college student population. Internet addiction is a factor contributing to students' declining mental health (Cain & Malcom, 2019; Lipson et al., 2019). The target population for this study was undergraduate students attending traditional campus-based or non-traditional (online) programs. Including online students was appropriate because approximately 38% of all undergraduate students in the United States take at least some courses in an online format (National Center of Education Statistics, 2017). Of interest to this study were the cultural differences among Black and White U.S. college students in late adolescents. As a result, the sample was restricted to U.S. undergraduate students 18–22 years old.

The characteristics of the average U.S. college student does not reflect characteristics in the general population, thus limiting the generalizability of findings beyond the college student population (Stroebe et al., 2018). Utilization of an Internet-based survey also has for generalizability of findings. Research suggests that nearly 100% of U.S. college students have access to the Internet, and 95% have internet availability in their homes (Smith et al., 2011). Therefore, it was not expected that utilizing an Internet-based survey method would pose major limitations to generalizing findings among the college student population.

The individualism/collectivism theory was chosen for this study because it provides a theoretical rational for why cultural attitudes influence shared patterns of behavior, and communication. Different cultures endorse different values regarding an individual's integration with others and the social environment, as such the most studied cross-cultural variations are individualism and collectivism (Trandis, 1995; Hofstede, 1980). Additionally, there is heterogeneity in the values of individuals residing within the same country. For example, China is considered a collectivistic country; however, people within the same nation can be distinguished as more or less individualistic. This was the presumption made in the current study. Though America may be individualistic overall, Blacks with their unique historical and social experiences may hold collectivistic attitudes.

## Limitations

A limitation of this study was whether participants provided accurate estimates of their smartphone and social media use, as research suggests that people underestimate or

under-report their media use by 40% (Giunchiglia et al., 2018). Internet-based research limits the potential for diversity among participants, as people who self-select to participate in Internet-based research may be inherently different than people who do not elect to participate in research. This may limit representation of the target population (Stroebe et al., 2018). Internet survey research is also subject to bias in that demographic differences may exist between internet users and non-users (Best et al., 2001). Anonymous data collection was used to aid in encouraging participant honesty.

## Significance

Internet and social media use has increased consistently over the last decade, becoming the primary means by which college students communicate and socialize (Perrin, 2015). Research has demonstrated a significant relationship between social media use and poor psychological health, which interferes with academic performance (Cain & Malcom, 2019). The findings from the current study may increase awareness of the harmful effects of Internet addiction and nomophobia. These findings may be beneficial to university faculty, mental health professionals, parents, and students seeking to monitor and promote appropriate Internet and smartphone use among young adults. University faculty are faced with first year students learning to navigate novel learning and living environments. As such these findings may provide insight on how Internet addiction and nomophobia on college campuses can be addressed. Mental health professionals have observed that excessive Internet and social media use contribute to anxiety and depression (Karim et al., 2020). The findings from the current study may aid mental health clinicians in the development of inclusive intervention/prevention measures

for young adults suffering from Internet addiction and nomophobia.

The current generation of adolescents and young adults utilize the Internet and social media more than any other age demographic (Anderson & Jiang, 2018). The implications are that Internet addiction and nomophobia are not an if problem, but more of a when problem. As such, the ramifications are yet to be observed. It was the intent of this study to contribute to the literature by providing knowledge of the consequences of Internet misuse, as well as the negative ramification of Internet addiction and nomophobia. With this knowledge mental health professionals may be better equipped to mitigate and address this threat. This study can promote social change by informing policy and instruction on Internet and social media use among college students as well as the development of effective prevention and intervention resources for future generations of adolescents and young adults who struggle with Internet addiction and nomophobia.

## Summary

Research suggests that the relationship between Internet misuse and mental wellness is a significant social problem on college campuses across the United States. This is relevant to the current generation of college students as they use the Internet as a primary source of information, communication, and entertainment. Adolescent development is unique as it marks the transition from childhood to adulthood. During this time college students are forming self-identity, learning how to communicate and socialize as adults while also navigating novel economic, living, and learning environments. Excessive usage of mobile devices and the need to access the Internet has been shown to keep some students on their phone for as much as 7 hours daily (Kim et al.

2019). These facets of the college and adolescent years may serve as predispositions for Internet addiction and nomophobia. As an emerging concern nomophobia and Internet addiction warrant an in-depth understanding. These efforts may aid in the creation of effective, inclusive prevention and intervention strategies for college students at risk for Internet addiction and nomophobia. Chapter 2 provides an in-depth examination of the empirical literature on race, individualism/collectivism, Internet addiction, and nomophobia among college students.

# Chapter 2: Literature Review

The literature reviewed for this study was accessed through the Walden University Library, primarily via EBSCOhost. Databases included APA PsycNet, APA PsycInfo, ResearchGate, SAGE Journals, Taylor PubMed, ProQuest, ScienceDirect, Google Scholar, and the Electronic Journal of Sociology. Key terms used in the literature search included combinations of the following: *social media use, nomophobia, ethnicity, race, culture, collectivism, individualism, Internet use, Internet addiction, young adults, adolescents,* and *college students.* Many of the articles included in this literature review reflect peer-reviewed research conducted between 2014 to 2021, except for some sources used to reference individualism/collectivism theory. There was limited research on race/ethnicity and social media use and Internet addiction, in these instances studies that focused on other variables yet also observed race/ethnicity were reviewed.

## Theoretical Foundation

Hofstede's (1980) cultural dimensions theory was developed as a framework for cross-cultural communication. Hofstede examined the results of a worldwide survey of employee values between 1967 and 1973. His findings revealed the effects of a society's culture on the values of its members as well as how these values relate to behavior. Hofstede described culture as a collective phenomenon shared by individuals from the same social environment, it is learned, and developed in time, and differs by human nature and individual personality (Hofstede, 1980). Hofstede's (1983) cultural dimension theory holds that one's cultural perspective influences values, behavior, and relationships.

The theory describes four cultural constructs derived from work and life values:

power distance, uncertainty avoidance, individualism/collectivism, and masculinity/femininity. In power distance cultures such as Russia and China, hierarchy is valued, respect is given, and rules are followed. In individualistic cultures such as the United States, people see themselves as distinct from others and put the interest of themselves and their immediate family first. Most of the world's cultures are collectivistic. In masculine cultures, such as Japan, men are expected to be assertive, competitive, and driven by salary, status, and success. Women are expected to be caring and focused on quality of life. In feminine cultures such as Norway, both men and women are supposed to embody the emotional gender roles associated with women in masculine cultures. Uncertainty avoidance refers to the level of comfort people in this culture feel when matters are ambiguous, or unknown. Generalizations about a country's culture are insightful; however, they are more so guidelines for better understanding. These group level dimensions also do not provide individual distinctions between members of a society and/or personalities. This can be especially true in countries such as the United States where the overall population may be considered individualistic, yet it is possible for members within the society to have collectivistic values. For instance, African American culture has been described as emphasizing communalism, through an awareness of interdependence and interconnectedness within the group (Hurley & Hurley, 2021).

The collectivism/individualism dimension was chosen to further explore cultural perspective in the current study as it may be applicable to the cultural distinctions among European and African Americans. Four defining attributes of individualism and

collectivism were defined as (a) the definition of self, (b) personal goals, (c) the emphasis on exchange rather than communal relationships, and (d) the importance of attitudes and norms as determinants of social behavior (Triandis, 1995). Individuals in collectivistic cultures view environmental variables, such as cultural norms and obligations, as being stable and that it is the individual that must be willing to change to fit the environment (Triandis, 1995). In contrast, those raised in individualistic cultures are more likely to see themselves as being stable, in terms of attitudes, rights, and personality, with their environment being a variable that should change to fit the individual. In individualistic cultures people place individual goals first, designating a high value to freedom of self-expression, autonomy, and individual decision making (Trandis, 1995). Collectivistic cultures emphasize the needs of the group (familial/community) with this in turn influencing individual identity. Additionally, individualistic cultures place a greater emphasis on the informational function of communication, whereas collectivistic cultures place greater emphasis on the relational function (Miyamoto & Schwarz, 2006).

The individualism and collectivism model proposes four independent cultural dimensions. Vertical collectivism (VC) is seeing the self as a part of a collective and being willing to accept hierarchy and inequality within that collective. Vertical individualism (VI) is seeing the self as fully autonomous but recognizing that inequality will exist among individuals and accepting this inequality. Horizontal collectivism (HC) is seeing the self as part of a collective but perceiving all members of the collective as equal. Lastly, horizontal individualism (HI) is seeing the self as fully autonomous and believing that equality between individuals is ideal. These four dimensions are widely

represented in the literature and provide an in-depth examination of cultural patterns (Markus & Kanyama, 1991). For example, Poyrazil and Devonish (2020) examined the relationship between social media use and cultural values among international students in the United States. The findings were that students who were more individualistic reported less homesickness, and international students who had higher levels of collectivism showed higher usage levels of social networking sites. There was a positive correlation between intensity of social networking sites usage and homesickness. For students with more collectivistic cultural values, social media use may have helped to mitigate the intensity of homesickness.

When considering ethnicity and race, cultural differences may be linked to historical and socially related experiences. Komarraju and Cokley (2008) examined ethnic differences in horizontal and vertical dimensions of individualism and collectivism among 96 African American and 149 European American college students (average age 21 years). The 32-item Individualism/Collectivism Scale (Singelis et al., 1995) was utilized. The results revealed that African Americans were significantly higher in horizontal individualism while European Americans were higher in horizontal collectivism and vertical individualism. This identifies cultural distinctions among Black and White individuals in the United States, which may be predictive of Internet use.

The literature on social media use and cultural attitudes is limited. However, Stavropoulos et al. (2021) examined the relationship between internet gaming disorder and cultural attitudes. The presumption was that Internet gaming disorder was dependent on whether one was more individualistic or collectivistic. In a sample of 1,032 internet

gamers, a significant relationship was revealed between individualism-collectivism and Internet gaming disorder symptoms. Specifically, those who were less collectivistic or less influenced by social groups displayed greater Internet gaming disorder symptoms. The implications are that collectivism or larger in-group social support may contribute to reduced Internet misuse.

Researchers have embraced the argument that cultural groups with distinct histories may support the emergence of in-group dynamics (Coon & Kemmelmeir, 2001; Gaines et al., 1997). In such instances the mainstream culture may produce a convergence in values while specific and diverse experiences yield a varying outlook within in-groups. African Americans and European Americans have co-existed in America for centuries; however, varying historical and social experiences may have created diverse cultural attitudes between the two. Further understanding of these cultural perspectives may aid mental health professionals with valuable information applicable to preventative and intervention resources. This knowledge may also lead to the inclusion of African Americans in the diagnosis and treatment of Internet addiction and nomophobia. Further understanding of the relationship between social media use and cultural attitudes was the rational for choosing Hofstead's (1980) collectivism/individualism theory as the theoretical foundation for the current study.

## Literature Review Related to Key Variables

### Race and Social Media Use

Social media and the Internet enable communication, socialization, and information sharing. Cultural perspectives influence what individuals share on these

platforms as well as how they socialize and communicate. Researchers have found that European Americans were significantly more likely to use the Internet for individualistic purposes when compared to other ethnicities Flores (2011). Research also suggests that remnants of African culture persist in contemporary African American culture (Jones, 1986). African American culture has been shaped by a history of slavery, second-class citizenship, and institutionalized discrimination (Dovidio & Gaertner, 2000). This shared experience of oppression may have fostered an in-group solidarity creating a sense of collectivism among this demographic. In contrast, European American's history has been shaped by the Western European origins of early American settlers. European settlers colonizing the Americas valued personal achievement, advancement, individuality, and eventually autonomy from Great Britain (Barker & Carman, 2000). This cultural difference may be reflective of communication styles and purpose when utilizing the Internet.

Research findings provide insight into how race influences social media use. Villanti et al. (2017) provided updated estimates of social media use and access to digital technologies among U.S. adults aged 18–22 from 2014 to 2106. Subjects were asked about their frequency of use, access to digital devices, and sociodemographic characteristics. Regular use was defined as using a given social media site at least weekly. In the 2014 cohort 89.42 % reported regular use of at least one social media site. In the 2016 sample this increased to 97.5%. Respondents reported using an average of 7.6 social media sites (Tumblr 85.5%, Vine 84.7%, Snapchat 81.7%, Instagram 80.7%, and LinkedIn 78.9%). Top social media sites were Facebook, Youtube, Instagram, Snapchat,

and Twitter. Overall, 87% reported access to the Internet with a smartphone, 74% a desktop or laptop with internet access, 41% a table with Internet access, 29% a smart TV or video game console with Internet access, 11% a cell phone without Internet access, and 3% none of the above. It was also revealed that there was no significant difference in regular use of a site by race/ethnicity, except for LinkedIn.

In another study specifically on Twitter, though American Twitter users are declining, the platform is increasingly being used by traditionally marginalized (African American) groups who do not have a significant voice in American political and economic life (Murthy et al., 2016). Results showed a significant correlation between a decrease in mean intertweet interval and increased population density. There was also a significant relationship between race and social media use. The results revealed an increase in African American inner-city usage of Twitter, which was attributed to calls for social justice occurring at the time. Uniting for social justice entails promotion of the group's needs (racial equality) over that of the individual. These findings support the hypothesis that there is a relationship between race and social media use. The United States is considered an individualistic nation. As a marginalized group within the United States, it is plausible that Black individuals possess collectivistic attitudes, whereas White individuals identify with the individualist cultural attitudes associated with the country.

**Collectivism/Individualism and Social Media Use**

Social media use differs by cultural orientation (Chapman & Lahav, 2008). Individuals from the West show more user-centric social media use, whereas those from the East display social media use that is ingroup oriented. In a sample of 36 social media

users in the United States, France, South Korea, and China, participants in the United States displayed more individualistic usage of social media such as sharing personal information, whereas Chinese respondents displayed more collectivistic usage, such as being less likely to share personal information, though several Chinese respondents stated that they sought out online contacts whom they did not know because these conversations were anonymous. Thus, in China, social media may allow the facilitation of personal discussions that are difficult to have otherwise. French respondents also said they would not discuss personal issues in online postings, preferring to talk in person with online friends. In South Korea, the most popular behavior reported was photo sharing on the dominant provider Cyworld. Cyworld is used by all ages and is integrated into software that is important for other daily communications. Thus, use of this platform has become a cultural norm, suggesting that its usage is a collectivistic in-group norm.

In terms of social media use, research showed that the high collectivistic cultures including Turkey, Korea, Thailand, Egypt, and India reported statistically equal numbers of online friends as did the highly individualistic culture of the United States (Cardon et al., 2009). The Internet presents fewer restrictions and more opportunities for self-expression in less threatening ways. The Internet thus provides more avenues for collectivists who may not experience these opportunities in face-to-face encounters. ties.

Similar researchers have supported the influence of individualism and collectivism on social media use. In a study that consisted of 130 Korean undergraduate student and 146 U.S. college students, Korean participants had more relational/interdependent beliefs about Facebook than American participants, suggesting

a collectivistic cultural orientation in social media use (Hong & Na, 2018). Another study with a sample of 41,911 Americans, 6,236 British, 2,141 Canadians, 4,335 Indians, 160 Japanese, 752 Malaysians, 732 Singaporeans, 87 Taiwanese, 190 Thais, and 12 Vietnamese showed that relational/interdependent activities on Facebook were more prevalent in Eastern cultures than Western cultures, suggesting more collectivistic use among Eastern cultures (Hong & Na, 2018). Finally, results revealed that interdependent usage of Facebook led to more relational reasoning, implying that cultural orientations not only impact social media use but adapt to match types of use (Hong & Na, 2018). These findings reveal that individuals with collectivistic values utilized social media in ways that were collectivistic, and individuals in individualistic cultures utilized social media in individualistic ways. These findings are consistent with the view of Triandis (1995) that cultural perspectives influence behavior and other forms of communication.

The historical exclusion and oppression of minorities creates a connectedness among in-group members (Levin & Pratto, 1997). Though it is likely that African Americans possess individualistic attitudes, experiencing discrimination and oppression may support collectivistic views in particular aspects of their lives. However, it cannot be simplified to suggest that humans are uniformly represented like phylum in zoology where birds are represented by one or two attributes such as wings and feathers (Singelis et al., 1995). Instead, such categorizations provide an intermediate level construct to further explore how individualism and collectivism may define culturally specific attitudes. The United States as an ideal demographic for examining the relationship between individualistic/collectivistic attitudes and media use.

**Social Media Use Among Young Adults**

Young adults in the United States use mobile phones as their primary form of communication, entertainment, staying abreast of current events (Pew Research Center, 2019). The Pew Research Center (2019) found that 95% of teens report having a smartphone or access to one. These mobile connections are fueling more-persistent online activities with 45% of teens reporting being online on a near consistent basis. The survey also found that there is no clear consensus among teens about the effect social media has on their lives. The integration of the Internet and subsequently social media has changed the way young adults communicate. One could argue that this increased ability to communicate provides young adults with richer opportunities to interact, and access educational resources. Developmentally adolescents benefit from social interactions that contribute to their sense of self, identity, and place in society at large (Perez-Felkner, 2013).

Kircaburun et al. (2020) investigated the influence of demographics and Big Five personality dimensions on social media use motives, social media site preferences, and problematic social media use. The sample consisted of 1,008 undergraduate students, with a mean age of 20.49 years. Participants completed the Social Media Use Questionnaire, the Social Media Usage Aims Scale, and the Ten-Item Personality Inventory. The findings revealed that extroverts used social media more frequently for maintaining existing relationships, for passing time, and for managing tasks. Less conscientious individuals used social media for expressing or presenting themselves as being more popular. Neurotic individuals used social media for passing time. Individuals

who were open to experience were found to use social media for maintaining existing relationships and for informational and educational purposes. Regarding site preference, 14% of the participants used the Internet less than 2 hours daily and 44% used it more than 4 hours daily. Similarly, 13% used mobile phones less than 2 hours daily, and 51% used mobile phones more than 4 hours daily. Social media platform usages revealed the following usage percentages among participants: Whatsapp (92%), Instagram (79%), YouTube (78%), Facebook (55%), Snapchat (37%) Google+ (37%), and Twitter (32%). Participants who preferred Instagram, Snapchat, and Facebook reported higher scores of Problematic Social Media Use. Problematic social media use was found to be associated with being introverted, more agreeable, neurotic, and less conscientious. In relation to motives, problematic social media use was associated with higher use of Instagram, Snapchat, and Facebook. In relation to motives problematic social media use was positively associated with meeting new people and socializing, expressing, or presenting a more popular self, and passing time, and negatively associated with informational and educational uses. These findings contributed to further understanding the motives, role and of use social media among young adults.

Alhabas and Ma (2017) explored the difference between Facebook, Twitter, Instagram, and Snapchat in terms of intensity of use, time spent daily on the platform, and use motivations among 363 college students. The mean age of the sample was 22 years. Ninety-seven percent reported having a Facebook account, 79.1% were on Twitter, 87.1 % on Instagram, and 84% were on Snapchat. Findings showed that participants spent the most time daily on Instagram followed by Snapchat, Facebook, and Twitter. All

motivations, except for information sharing, were significantly different across the four platforms. Across the four platforms, the highest rated motivations were for entertainment and convenience. The findings showed little to no association between network size (i.e., number of friends/followers) and the intensity to use each platform. More specifically Internet and social media use is a mainstream source of communication and entertainment among young adults. These findings provide insight into the intricacies of social media use among young adults.

**Social Media Use and Mental Health Among Young Adults**

The literature supports a relationship between Internet, social media misuse, and adverse mental health outcomes among young adults. Derbyshire et al. (2013) examined the relationship between Internet use and physical and mental health, as well as academic variables among 2,180 college students. The Internet addiction test was used to determine levels of problematic Internet use. The Mini International Neuropsychiatric Interview was used to test for psychiatric problems. The results found that 237 students met the criteria for limited Internet use, 1,502 for mild Internet use, and 98 for moderate to severe Internet use. Other factors significantly associated with higher internet use were lower GPA, less physical activity, and higher depression and stress scores.

Zhou et al. (2020) explored the development of depressive symptoms among first year college students while socially adjusting to college and the protective role of perceived family support. The sample consisted of 1,137 college students with a mean age of 18 years. The study was conducted in 3 waves with an interval of 1 month between each wave. The freshmen were found to use social networking sites as a means of

adjusting to college life. The results revealed that introversion at wave 1 positively predicted compensatory use of social networking sites at wave 2. The relationship between perceived family support, introversion, and compensatory social networking sites use was also investigated. It was revealed that family support significantly decreased depression in wave 3. These findings uncovered an enhancing effect of family support, implying the importance of parent's role in regulating social networking site use among adolescents, and perhaps the overall importance of resources for young adults who engage in problematic media use. This study identified young adult use of social media as a coping mechanism during the transition to college life. Compensatory social media use indicated that young adults who experienced difficulties offline may benefit from prevention or intervention resources online. Also important is the role of external resources such as parents and potentially mental health professionals who are on the frontlines of preventing and or providing adequate interventions for problematic media use among young adults (Bettmann et al., 2021; Shensa, 2018; Zhou et al., 2020).

Primack et al. (2017) assessed associations between social media use and perceived social isolation among a sample of 1,787 U.S. adults aged 19-32 years. Social media use was assessed using both time and frequency associated with 11 social media platforms (Facebook, Twitter, Google+, YouTube, LinkedIn, Instagram, Pintrest, Tumblr, Vine, Snapchat, and Reddit. Perceived social isolation was measured using the Patient-Reported Outcomes Measurement Information System scale. The findings were that young adults with high social media use reported significantly higher levels of social isolation than those with lower social media use.

Zhou et al. (2021) proposed a cognitive behavior therapy-based short-term abstinence intervention to treat problematic social media use. This intervention required users to abstain from social media for 2.5 hours, 4 days out of a week, for 2 weeks. A mixed method design was used to examine the effectiveness of the intervention. Interviews, diaries, Young's Internet Addiction Test, and the Satisfaction with Life Scale were utilized. The sample consisted of 65 participants (mean age 28) recruited from social networking sites in China. The results of the qualitative diaries and interviews revealed that participants who abstained from social media reported an improvement in behaviors, feelings, and cognitions. Participants also reported improved productivity, increased autonomy, closer off-line relationships, and alleviated fear of missing out. Pre- and post-life satisfaction were also measured. Analysis of variance revealed a significant interaction effect of social media abstinence and time. Participants with increased periods of social media abstinence showed increases in life satisfaction. The implications are that social media abstinence may be an effective intervention to address social media misuse.

Ha et. al (2007) evaluated the relationship between depression and Internet addiction among a sample of 452 Korean adolescents. Participants were evaluated for their severity of Internet addiction, and how it correlated to depression and obsessive-compulsive symptoms. Out of the 452 subjects, 131 (30.8%) were classified as suffering from Internet addiction, and 313 subjects (69.2%) were classified as non-addicted. The results revealed a significant association between Internet addiction and depressive symptoms among the sample. More time spent online was significantly related to higher levels of depression, anxiety, and other negative mental health outcomes. The authors

noted that the Internet is ingrained into modern life, however individuals must be cognizant of spent online to preserve mental wellness.

Stevens et al. (2020) used data from 43,003 undergraduates participating in the 2017 American College Health Association-National College Health Assessment to examine rates of problematic internet use and mental health symptoms. Mental health and behaviors related to mood, including three specifics to self-harm and suicidality, were assessed. Across the sample, 10% reported problematic internet use. Participants who reported problematic Internet use were more than twice as likely to report feeling hopeless, overwhelmed, exhausted, very lonely, very sad, so depressed it was difficult to function, overwhelming anxiety, or overwhelming anger. Problematic Internet use was also found to be significantly related to engaging in intentional self-injurious behaviors, considered suicide, or attempted suicide. The implications are that problematic Internet use is a serious concern, that may result in increases in negative mental health outcomes among college students.

Rodrigues et al. (2020) examined Internet use patterns, generalized problematic Internet use, and the relationship with psychological distress among a sample of 503 university students (mean age 20.25 years). Participants completed a questionnaire about internet use patterns, the Generalized Problematic Internet Use Scale 2, and the Depression Anxiety and Stress Scales. The results revealed that nearly 100% of the sample used the Internet every day. Students spent an average of 5 hours online daily. For 33% of the participants, time spent online exceeded the time they planned to spend online. Most of the students reported preference to being online during the night, and

when alone. A statistically significant association was found between time spent online and sex, with female participants reporting more time spent online than males. Nearly 100% of the students used social networking sites, and 75% of them had three or more social networks. The majority reported that they shared content on social networking sites, with women sharing significantly more content than men. Female participants expressed feeling that the content they shared or accessed on social networking sites influenced their emotional state in a positive way. Among men, 26% reported that online activity negatively impacted their relationships. Finally, 49% expressed interference in their academic performance and 81% reported no parental regulation or supervision of time spent on the Internet prior to college. The implications are that university students are particularly vulnerable to problematic internet use. Unsupervised usage, being isolated from family and friends, and potentially naivety to the consequences of Internet misuse contribute to this vulnerability.

Vannucci et al. (2017) examined the impact of time spent using social media on anxiety symptoms in a sample of 563 young adults aged 18 to 22 years. Instruments used were the Technology Use Questionnaire, the Beck Anxiety Inventory-Trait, and the Overall Anxiety Severity and Impairment Scale. Logistic regression was utilized to exam whether social media use was associated with anxiety severity and the likelihood that anxiety impairment fell above the clinical cut-off for an anxiety disorder. The results revealed that more time spent using social networking sites was significantly associated with greater symptoms of dispositional anxiety but was unrelated to recent anxiety-related impairment. Also, more daily social networking site use was significantly

associated with a greater likelihood of scoring above the anxiety severity clinical cut-off, indicating a probable anxiety disorder. There was a positive association between social media use and anxiety which holds important clinical implications. The authors noted the possibility that anxiety symptoms may encourage individuals to engage more in social media use, and/or that individuals with anxiety may seek validation of self-worth or seek to reduce feelings of worry through social networking site use (Clerkin et al., 2013). In such cases, support groups on social networking sites may serve as an intervention (Moreno & Whitehall, 2014). Alternatively, without clinical intervention or the awareness to utilize the benefits within social networking sites, individuals with anxiety may only be cognizant of social networking sites use a maladaptive coping strategy (e.g., posting about problems, avoidance of real-world issues, excessive cyber-stalking).

Bettmann et al. (2021) utilized a case study design to explore the relationship between young adult depression, anxiety, and social media use. A case study design was used to illuminate how problematic social media use, depression, and anxiety manifested in one college student. The participant was a 24-year-old White woman who was self-referred to the counseling center at her university. She requested outpatient treatment for depression and anxiety. Her use of social media appeared to reinforce negative emotions, judgments, and unrealistic expectations she had of herself. The clinician brought attention to her social media use and subsequent low confidence, comparison to others, feelings of loneliness and inadequacy. The findings provided awareness into the experiences of young adults with social media as well as approaches mental health clinicians can use to identify and treat depression and anxiety.

**Internet Addiction**

Internet addiction is the inability to control one's internet use to the extent that it leads to stress, anxiety, and impairment of daily activities (Shapira et al., 2003). Researchers have not presented conclusive data as to whether Internet addiction can be classified as a disorder (Cash et al, 2012; Yellowlees & Marks, 2007). However, several terms have been used to describe this problematic behavior. Excessive Internet use, compulsive Internet use, pathological Internet use, and Internet addictive behavior have been classified under Internet gaming disorder in the DSM-V (American Psychiatric Association, 2013). Internet addiction among college students is a concern as adolescents who suffer from it experience high levels of depression, and anxiety (Ostovar et al., 2016). There is, however, no clear consensus on the differentiation between excessive internet use and true pathology. Thus, there are large variations in estimates of the existence of Internet addiction in young adults (Tang et al. 2017).

Internet addiction resembles other pathological addictions in that it consists of impulse-control and withdrawal (Young, 1996). Young (2004) defined internet addiction as the inability to fight the will to use the internet excessively, the sense of emptiness, annoyance, and aggression in the absence of the internet, and the deterioration of an individual's working, social and family life because of excessive Internet use. With other addictive substances such as cigarettes and alcohol, one can avoid the temptation by not utilizing the substance. However, the internet is so intricately woven into everyday life that it is nearly impossible to abstain from its use. In addition, the internet itself may not be the issue as much as the means and duration by which it is utilized. Because of its

widespread applicability individuals can easily become unconscious of time spent online before realizing there is a problem (Tari Comert, 2010). Impulse control, cognitive ability and loss of executive function are involved with other forms of addiction (e.g., substance, food, & gambling). These facets of addiction have been identified in people with Internet addiction (Billieux & Van der Linden, 2012). Internet addiction can encompass many different behaviors, including compulsive online shopping, accessing pornographic content, online gaming, social networks, and online gambling (Ionnidis et al., 2016; Kiraly et al., 2015). As such, Internet addiction may encompass characteristics which are like a variety of addictions, suggesting the potential for identifying Internet addiction as a symptom while treating anxiety and depression in adolescents.

Morrison and Gore (2010) explored the relationship between Internet addiction and depression among young adults (mean age 21.24 years). The three scales utilized in the study were: the Internet addiction test, the Internet Function Questionnaire, and the Beck Depression Inventory. The Internet Function Questionnaire measured the different uses people have for the Internet such as shopping, browsing, games, chat, gambling, email, research, and sexually gratifying sites. The study considered the percentage of time spent browsing these sites. The sample consisted of 1,319 individuals who were recruited via links placed on UK based social networking sites. Within the sample 1.2% suffered from Internet addiction. The results revealed a significant relationship between Internet addiction tendencies and depression. Time spent on different activities online was also assessed. Average use for those in the Internet addiction group was significantly greater than for those in the non-addicted-group. What is not certain is whether Internet

addiction is the cause of depression or whether depressed individuals are drawn to the Internet. The internet is such an integrated facet of modern life that Internet addiction should be taken seriously as a distinct psychiatric construct. University students may be at particular risk given the flexibility of their work and school schedules, being unsupervised by adults for the first time in their lives and already spending a substantial amount of time online for school and social communication (Lin et al. 2016). Because this generation of adolescents have utilized the Internet throughout their lives, they may be unaware of how its misuse affects them. For these reasons, treatment for mental health wellness in this demographic should include an assessment of Internet use (Rosenthal et al., 2018).

Shen et al. (2020) investigated the prevalence and correlates of Internet addiction among Chinese 8,098 college students between the ages 17-26 years. The Self-Rating Anxiety Scale and Self-Rating Depression Scale, the Revised Chinese Internet Addiction Scale, and a 19 item self-reported scale were administered via a Chinese social app. The prevalence of Internet addiction and suicide attempts was 7.7% and 6.8%. There were no statistically significant differences between participants with and without Internet addiction and the following variables: sex, community, single-child family, family income, parent's education level, and right handedness. Participants with Internet addiction were younger than those without. The prevalence of suicide attempts among Internet addiction participants was 21.4%, while the prevalence of suicide attempts in participants without Internet addiction was 5.6%. Participants with internet addiction were also found to be at risk for anxiety and depression with a prevalence rate of 43.7%

and 37.5%. This increased significantly among students who attempted suicide (anxiety 73.9%, depression, 66.4%). This study highlighted the risks associated with Internet addiction among young adults.

Hasan and Abu Jaber (2020) aimed to identify the prevalence of Internet addiction among 163 undergraduate nursing students and its relationship with psychological distress and coping strategies. Participants completed the coping behaviors inventory, The Hamilton Depression Rating Scale, and the Self-Esteem Scale. Of the sample, 67.5% met the criteria for Internet addiction. Results revealed that the Internet was used excessively among the Internet addicted group at a significantly higher rate than among the non-Internet addiction group. There was a significant positive correlation between the Internet addiction subscales and avoidance coping mechanism. Participants who displayed avoidance coping mechanism were significantly more likely to suffer from Internet addiction. Depression levels were also significantly higher among the Internet addiction group. Self-esteem was negatively correlated with the Internet addiction group, suggesting that students who had higher self-esteem were less likely to be Internet addicted. Other demographic variables showed no statistical significance between Internet addiction and non-addiction groups. Internet addiction participants were also more likely to show work neglect than non-Internet addiction participants. Those in the non-Internet addiction group felt less compelled to use the Internet when offline. The Internet addiction group admitted to having trouble managing time spent online. These results imply that awareness of Internet misuse among this demographic is necessary and should be considered by mental health professionals and education administrators when

working with young adults. Preventative resources may greatly decrease distress and promote healthy coping strategies among young adults.

Lozano-Blasco et al. (2022) conducted a meta-analysis of the literature on Internet addiction in adolescence. The analysis consisted of 20 studies, comprising 21,878 adolescents from Europe, Asia, America, and Oceania. The mean age of the sample was 15.13 years. The results of this systematic review revealed an increase in Internet addiction among new generations, with other variables also playing a relevant role such as increases of individualism, lower sociability, and enculturation. Internet addiction levels were moderate without being pathological. However, they were excessively high for a typical population. The results showed that while the population does not suffer from severe Internet addiction, the incidence is alarming.

**Nomophobia**

Nomophobia is fear or anxiety derived from being without one's phone, the term was originally coined by the United Kingdom Post Office (Mail Online, 2008). The study evaluated anxiety disorders among 2,163 British residents being denied access to the internet and/or social media. This study found that 53% of mobile phone users were apprehensive when they lose their phones, run out of battery, or credit, or have no internet coverage. In observed nomophobia cases, symptoms present as anxiety, respiratory alterations, trembling, perspiration, agitation, disorientation, and tachycardia. Nomophobia is an emerging mental health concern in need of further studying as the internet is intricately engrained in modern society.

Jilisha et al. (2019) explored smartphone use and nomophobia among a sample of

774 undergraduate students 18 years and above. A mixed-method study design was utilized with a cross-sectional analytical component and a qualitative descriptive component. Self-administered, semi-structured questionnaires were used to collect sociodemographic and smartphone usage data. The Prasad's scale for socioeconomic class and the Nomophobia Questionnaire were used. Duration of smartphone usage was found to be 3-6 hours in more than half of the participants (52.1%). Nineteen percent reported using their smartphone for 7 hours or more per day. Nearly half (48.6%) reported checking their phones at least 4-6 times per hour. Age, male, gender, increased daily duration of smartphone usage, frequency of checking smartphone, using a smartphone for social networking and texting, checking smartphone without reason, and checking smartphone immediately after waking were significantly associated with nomophobia. The significant positive association between age and nomophobia scores was attributed to the increased need of young adults to stay connected with friends and family members. Out of 774 respondents, nine had no nomophobia, 161 (20.8 %) had mild nomophobia, 422 (54.5%) had moderate nomophobia, and 182 (23.5%) had severe nomophobia. The in-dept qualitative interviews showed attributes of addiction among the students including dependency and compulsive behavior. Students were also shown to experience anxiety and frustration when they had to part with their smartphones.

Bartwal and Nath (2020) evaluated nomophobia among 451 medical students. The Nomophobia Questionnaire was used to assess the prevalence of nomophobia among the students, as well as the purpose and context in which smartphones were used. The sample consisted of 451 students, mean age 20.7 years. Of the sample, 15.5% reported

mild nomophobia, 67.2% moderate, and 17.3% severe. Smartphones were mostly used for the purpose of talking to family and friends, followed by listening to music. Forty percent used social media to kill time, 91.4% when they were bored, 86% when alone, and 74.1% while waiting for someone. The implications are that smartphone use is a concern for developing nomophobia among young adults.

Dasgupta et al. (2017) investigated the prevalence of nomophobia among 303 medical and 305 engineering undergraduates in West Bengal. The Nomophobia Questionnaire was used. The results revealed that spending more than 4 hours daily on smartphones had a significant effect on nomophobia. The implications are that excessive smartphone use and dependence on Internet access is a relevant concern for young adults.

Nomophobia levels were greater among engineering students when compared to medical students. The proportion of engineering students checking their phones every 5 min to every hour (77%) was slightly more than medical students (73.3%). Engineering students also showed higher mean scores in all factors except *not being able to communicate.* Significantly higher means were observed among engineering students for *giving up convenience* and *not being able to access information.* Significantly higher means were found in engineering students regarding *scared due to running out of battery, nervousness due to disconnection from online identity, uncomfortable because could not stay up to date with social media, and anxious because could not check E-mail.* These findings reveal that engineering students showed slightly higher total nomophobia scores than medical students. Most students used their smartphone for talking and texting (medical 89.1%, engineering 92%), followed by gaming, music or to kill time (medical

86.8%, engineering 90.2%) and checking mail or social media (medical 81.2%, engineering 84.6%). The majority of both used their smartphones when alone/in the restroom (medical 95.7%, engineering 92.5%) or while waiting for someone or walking (medical 69.6%, engineering 70.5%). The implications are that although nomophobia is a relatively novel concept, its presence among young adults is important. Standard measures for prevention and intervention will be essential as the longer-term outcomes of nomophobia are understood.

Anshari et al. (2019) examined nomophobia among 230 first year university students. The study was qualitative in nature with the researchers conducting focus group discussions with participants. Text mining was utilized to verify patterns among the sample. Participants were asked to define nomophobia, its characteristics, and how to overcome it. Participants who suffered from nomophobia displayed characteristics such as social anxiety, introversion, and low confidence. They preferred to express their feelings on social media, as opposed to face to face. Participants with nomophobia also developed and suffered from obsessive-compulsive disorder and found it easier to make friends in a virtual environment as opposed to in person. Individuals who suffered from nomophobia were also mentally challenged when asked to present verbally in class. They expressed becoming antisocial and found it difficult to communicate and make real friends as well as experienced loneliness. Over time these individuals reported feeling stressed and resorted to communicating via messaging. Participants suffering from nomophobia also reported always carrying their chargers with them to keep their device powered. They also reported sleeping with their smartphone next to them. Identified

solutions among the sample were limiting smartphone use and engaging in other activities.

Lee et al. (2017) examined the impact of different cell phone policies on learning and emotion-regulation and levels of nomophobia. Participants ($n$ = 160 students) were recruited from a small, liberal arts college in Southeastern Arkansas. They were randomly assigned to four groups. Group 1 was allowed to use their cellphones; group 2 were not and were instructed to place their phones in silent mode. Group 3 had their cell phones completely removed from their possession. A control group received no instruction on cell phone use. Participants were then presented with a 20-minute video, after which they completed a 20-question test. After the test participants were administered the nomophobia questionnaire to assess their level of discomfort without their cellphones (Groups 2 & 3). A mixed analysis of variance was performed to assess the effects of cellphone use on the quiz. The results revealed that quiz performance was significantly higher among the group whose cell phones were removed. Greater nomophobia was also observed in the group whose cell phones were removed. Greater nomophobia was significantly associated with worse quiz performance. This study revealed the negative relationship between nomophobia and academic performance.

Khan et al. (2021) examined the prevalence and relationship of smartphone addiction, nomophobia, and social anxiety among 1,050 college and university students, ages 17- 30 years. The Smartphone Addiction Scale, the Nomophobia Questionnaire, and the Leibowitz Social Anxiety Scale were used. There was a significant positive correlation between nomophobia and smart phone addiction. Smartphone addiction had a

significant positive correlation with social anxiety. Smartphone addiction was also found to be a significant predictor of social anxiety and nomophobia. These findings imply that as reliance on smartphones increases so will nomophobia.

Nomophobia is a growing concern which will likely continue as dependence on smartphones increases. The implications are that nomophobia is an emerging concern, the necessity which warrants effective prevention and intervention strategies. It is paramount that mental health professionals be cognizant of the symptoms and assess for problematic smartphone, social media, and Internet use (Bekaroğlu & Yılmaz, 2020). While treatments are limited, mental health professionals currently utilize cognitive-behavior therapy, combined with pharmacological interventions (Bhattacharya et al., 2019). Tranylcypromine and clonazepam drugs and antidepressants have been successful in treating nomophobia symptoms (King et al., 2014). Reality approach or reality therapy is a newer approach in which the patient is advised to focus on other behaviors (painting, dancing, writing, etc.) instead of using mobile phones. Mental health services are essential to rehabilitation and care should be provided for managing anxiety and stress. Young adults should be educated about appropriate smartphone use.

## Summary and Conclusion

Appropriate ways to use the Internet and social media are essential to avoiding Internet addiction and nomophobia. Young adults are especially susceptible as they have grown up with this technology and have adopted its use as an everyday utility. Students are expected to use the Internet for educational purposes. Developmental and psychological characteristics of adolescence such as the need to establish a sense of

identity and develop meaningful intimate relationships, may also increase vulnerability to social media and Internet use. The literature establishes a relationship between problematic social media use, Internet addition, and nomophobia. Cross-cultural studies reveal a relationship between cultural attitudes and social media use. However, there is a lack of research on cultural orientation as a predictor of social media use, Internet addiction, and nomophobia in a U.S. sample. In-group identity as it relates to race may be characteristic of collectivistic attitudes among African Americans. In contrast, when compared to other ethnicities European Americans use the Internet for more individualistic purposes. The current study sought to examine whether cultural attitudes were predictive of Internet addiction, and nomophobia. In Chapter 3, I will discuss the research design and rational, methodology, sampling and sampling procedure, procedures for recruitment, participation, and data collection, instrumentation and operationalization of constructs, data analysis plan, research questions and hypothesis, threats to validity, and ethical procedures.

# Chapter 3: Research Method

The purpose of this study was to examine the relationship between race, individualistic/collectivistic attitudes, social media use, Internet addiction, and nomophobia. More specifically, I sought to determine the extent to which race, and individualistic/collectivistic attitudes predict social media use, Internet addiction, and nomophobia among undergraduate college students aged 18–22. In Chapter 3 I discuss the research design and rationale, methodology, sample and sampling procedures, procedures for recruitment participation and data collection, instrumentation and operationalization of constructs, data analysis plan, threats to validity, and ethical procedures.

## Research Design and Rationale

This study followed a quantitative nonexperimental survey design to examine the extent to which race (IV) and collectivistic/individualistic attitudes (IV) predict social Internet addiction (DV) and nomophobia (DV) among undergraduate college students aged 18–22. A quantitative design is used to test numerical relationships between variables (Boomfield & Fisher, 2019). In contrast, a qualitative research approach is designed to gather data rich descriptive data of lived experiences of participants (Kekeya, 2021). The present study was designed to examine the relationships between the independent and dependent variables along a measurable continuum, as such a quantitative design was best suited for this research. A nonexperimental design was chosen because the independent variables have already occurred and cannot be manipulated by the researcher (Salkind, 2010). The present study was designed to answer

questions about the college student population by measuring how race and cultural attitudes influence social media use, Internet addiction, and nomophobia. Surveys are often used in nonexperimental designs in which participants are asked questions about their beliefs, attitudes, and behaviors (Mrug, 2010). An Internet-based survey was used as this is cost effective and advantageous for reaching many participants in a short period of time (Mrug, 2010). College students in the United States have easy access to and are the most frequent users of the Internet (Jones et al., 2009; Pew Research Center, 2019). For these reasons an Internet-based survey was appropriate for this study.

## Methodology

### Population

Participants were undergraduate students enrolled in colleges in the United States, between the ages of 18–22. The average age of students enrolled in undergraduate programs in the United States is 21.8 years (Duffin, 2021). In 2019 there were approximately 19.6 million college students in the United States, with 14.5 million enrolled in public colleges and 5.14 million in private colleges (Hanson, 2021). Also as of 2019, 12 million or 55.2% of college students in the United States are White, and 2.1 million or 9.6% are Black (Hanson, 2021). As of 2018, 88% of young adults reported using some form of social networking sites, such as Facebook, Instagram, and Twitter, with roughly 81% of them using these platforms daily and 95.7% considered these platforms to be information sources (Fox, 2018, Kim et al., 2014; Rideout & ; Smith & Anderson, 2018).

## Sampling and Sampling Procedures

A convenience sampling strategy was utilized. The criteria for inclusion were as follows: between 18–22 years old, have Internet access, be enrolled in undergraduate education, U.S. citizen, and self-identified as either African American (Black) or European American (White). Data were collected using the Alchemer survey platform. G*Power version 3.1 was used to determine the minimum sample size for the study (Faul et al., 2009). Using an alpha level of .05, power 0.95, five predictor variables (i.e., race, horizontal collectivism, vertical collectivism, horizontal individualism, and vertical individualism), and an effect size of 0.15, the recommended sample size was 92. Consistent with recent research an effect size of 0.15 was found when examining the relationship between nomophobia and cultural attitudes among college students (Arpaci, 2017).

## Procedures for Recruitment, Participation, and Data Collection

Following IRB approval (approval no. 12-20-22-0739522 ), this study used the Alchemer surveys platform to recruit participants and distribute the survey. Potential participants who meet the inclusion criteria were directed to a link that included an informed consent form, eligibility screening questions, a demographic questionnaire, and the survey instruments. All data were collected anonymously. Potential participants were required to read and click on the link provided for informed consent prior to participation. My contact information was provided for participant questions regarding the research study. Walden University's participant advocate was provided for questions about participant's rights. Participants were required to be (a) U.S. citizens, (b) 18 to 22 years

of age, (c) currently enrolled in an undergraduate program, and (d) self-identify as either African American (Black) or European American (White). Participants were assured that their information would remain confidential. Participants were also informed that they were permitted to leave the study at any time.

## Instrumentation and Operationalization of Constructs

### *Horizontal & Vertical Individualism & Collectivism II scale*

The Horizontal & Vertical Individualism & Collectivism II scale is a 16-item scale designed to measure cultural orientation or more specifically the inclination to think, feel or act in a way that is culturally determined (Triandis & Gelfand, 1998). The scale takes approximately 10 minutes to complete. It distinguishes between four constructs of cultural orientation: horizontal (H), vertical (V), individualism (I), and collectivism (C).

The horizontal orientation emphasizes equality. Individuals with a horizontal cultural orientation view the self as having equal status with others. In contrast the vertical orientation emphasizes hierarchy. Individuals with a vertical cultural orientation view the self as differing from others along a hierarchy. These individuals accept inequality and believe that rank has privileges. Individualism emphasizes independence, exchange relationships and personal goals. Individuals with this orientation value promotion of self-goals and individual achievement. Collectivism emphasizes interdependence, and communal relationships. Individuals with this cultural orientation value group goals. When combined with individualism and collectivism these dimensions create the four cultural dimensions: horizontal individualism, vertical individualism,

horizontal collectivism, and vertical collectivism. Individuals with horizontal individualism are motivated to view the self as independent, self-reliant, and unique. Individuals with a vertical individualistic orientation are motivated to view the self as having high power and status relative to others and are not concerned with uniqueness, independence, or self-direction. Individuals with a horizontal collectivistic orientation are focused on sociability, loyalty and treating others with benevolence (Oishi et al.,1998). Individuals with a vertical collectivistic orientation are focused on dutifully fulfilling obligations to others.

The scale is a revision of the original Horizontal & Vertical Individualism & Collectivism Scale (Singelis et al., 1995). The original scale consisted of 32-items with participants asked to respond using a 9-point Likert scale (9 *strongly agree* to 1 *strongly disagree*); however, in hopes of improving the scale Trandis and Gelfand found that 16 items of the 32 exhibited higher factor loadings. Factor loadings are part of the outcome from factor analysis which explains correlations between variables using a smaller number of factors. Many studies have used the revised 16-item scale to measure individualism and collectivism constructs (Chiou, 2011; Guo et al., 2008; Li & Aksoy, 2007; Soh & Leong, 2002).

Trandis and Gelfand (1998) further separated individualism and collectivism horizontally and vertically to create four subscales: VI, VC, HI, HC. Sample items included: *I rely on myself most of the time; I rarely rely on others (horizontal individualism), Competition is the law of nature (vertical individualism, I feel good when I collaborate with others (horizontal collectivism, and It's my duty to take care of my*

*family, even when I have to sacrifice what I want (vertical collectivism).* Each subscale used the sum of eight items, with scores ranging from 8 to 72. Therefore, higher scores indicated greater degrees of individualistic or collectivistic attitudes (Triandis & Gelfand, 1998).

**Reliability.** Cronbach's alpha is a measure of scale internal consistency as it shows how closely related a set of items are. An accepted rule is that an α of 0.60 - 0.70 indicates an acceptable level of reliability and 0.80 or greater, a very good level. Triandis and Gelfand's (1998) original internal consistency values were .81 for horizonal individualism, .82 for vertical individualism, .80 for horizontal collectivism, and .73 for vertical collectivism.

**Validity.** Triandis and Gelfand (1998) conducted four studies to establish validity of the Horizontal & Vertical Individualism & Collectivism II. Study 1 consisted of 326 University students in South Korea utilizing data from a larger study. The aim was to provide further evidence of the viability of the constructs in a non-Western culture. The HC, VI, HI, and VC constructs emerged in the Korean sample, providing confidence in the viability of the horizontal and vertical distinctions. In Study 2, a sample of 127 Illinois undergraduate students (74% self-identified as White, 4% as Hispanic, 12% as Asian, and 8% as Black) were told the meanings of HI, VI, HC, and VC. They were then asked to provide written responses to situations that occur in everyday student life (e.g., you are buying new clothing, which is the most important factor when choosing the style?). Response choices were designed to measure cultural orientation (i.e., most suitable to your unique personality (HI), most impressive in social situations (VI), worn

by your friends (HC), recommended by your parents (VC)). The correlations between cultural orientation and the scenario items were generally high. The correlation between the cultural orientation and scenarios for HC was $r = .41$, $r = .51$ for VT, and $r = .29$ for VC. The only nonsignificant correlation was for HI which was $r = .11$. This may have been due to the U.S. being a more individualistic culture, restricting variability on this construct.

In Study 3, participants responded to items from Singelis et al. (1995) and were also provided with 48 nonoverlapping items that measured aspects of individualism (i.e., competition, emotional distance from in-groups, hedonism, and self-reliance) and collectivism (i.e., family integrity, interdependence, and sociability). To demonstrate the viability of the vertical and horizontal distinctions it was important to show that the constructs differentially relate in predictable ways, to constructs on the previous scale. Triandis et al. (1985) suggested that individualism consists of four facets: self-reliance (i.e., I usually struggle through personal problems by myself), competition (i.e., I always do my best when I compete with others), emotional distance from ingroups (e.g., The parents of those who did win an award have no right to feel that they themselves have earned it), and hedonism (e.g., It is important for me to enjoy my life). The collectivism construct consists of three factors: interdependence (i.e., Before making decisions I like to consult with many others), family integrity (i.e., I want my aging parents to live with me in my home), and sociability (i.e., I like sharing little things with my neighbors). The results showed that individualists scored high on competition, low on family integrity, relatively high on emotional distance from in-groups, somewhat low on interdependence,

high on self-reliance, and low on sociability. Collectivists scored low on competition, high on family integrity, low on emotional distance from in-group, and high on sociability. Horizontal individualism scores were predicted only by self-reliance ($p <$ .000). Vertical individualism scores were predicted by both competition ($p = .000$) and hedonism ($p < .005$). Vertical collectivism scores were predicted by family integrity ($p =$ .000) and sociability ($p < .005$). Horizontal collectivism was predicted by both interdependence ($p = .000$) and sociability ($p < .005$). These results demonstrate the distinctions among HI, VI, HC, and VC, providing evidence of convergent validity.

Triandis and Gelfand (1998) established construct validity by looking at the relationship between the items on the Horizontal & Vertical Individualism & Collectivism II and scores on other scales designed to measure cultural values (Altemeyer, 1981; Cheek et al., 1994; Clark et al., 1987; Gudykunst et al., 1994; Osyerman, 1993). Study 4's sample consisted of 90 undergraduates from the University of Illinois. Seventy-six percent self-identified as White, 4 % as Hispanic, 12% as Asian, and 8 % as Black. Triandis et al. (1998) selected eight items from Osyerman's (1993) Individualism and Collectivism scale, which was developed to measure cultural values among college students in Israel. The items from Osyerman's scale significantly correlated with horizontal individualism and horizontal collectivism ($r = .25$, $r = .31$, $p <$ .02). Seven items were selected from Gudykunst's et al. (1994) Self-Construal Scale. This study found that individual values (i.e., independent, and interdependent self-construal) were better predictors of communication styles across cultures than individualism and collectivism. There was a correlation among the scales ($r = .27$, $p <$

.01). All 14 items from the Clark's et al. (1987) Communal Orientation Scale were measured. This scale was designed to assess the extent to which the individual feels responsible for the welfare and needs of others and expects others to feel responsible for his or her needs. The Clark et al. (1987) scale correlated with horizontal collectivism ($r$ = .56, $p$ < .000) but not with vertical collectivism (r = .18, $p$ < .08). The Clark et al. (1987) scale also showed correlations for horizontal individualism ($r$ = -.29, $p$ < .005) and vertical individualism ($r$ = -.29, $p$ < .005) respectively. All 30 items from Cheek's et al. (1994) Aspects of Identity Questionnaire were tested. This scale was developed to measure the relative importance an individual grants to the four dimensions making one's own self: personal, relational, public, and collective identities. The scales correlated with vertical collectivism ($r$ = .32, $p$< .02). All 30 items from Altemeyer's (1981) Right-wing Authoritarianism Scale were used. This scale measures the degree to which people defer to established authorities, show aggression towards out-groups when authorities sanction that aggression, and support traditional values endorsed by authorities. The scales correlated with vertical collectivism ($r$ = .29, $p$ < .005), but not with horizontal collectivism ($r$ = .01). These findings support the validity of the constructs measured on the Horizontal & Vertical Individualism & Collectivism scale demonstrating its ability to measure cultural attributes. The Horizontal & Vertical Individualism & Collectivism II scale is in the public domain (Triandis & Gelfand, 1998). However, I contacted the authors of the scale and requested permission to use it in this study.

***Internet Addiction Test***

Internet addiction was measured using the Internet Addiction Test (Young, 1998).

The Internet addiction test consists of 20 self-reported items and was developed to assess pathological internet use. The scale takes approximately 10 minutes to complete. Criteria used to assess gambling disorders defined in the DSM-V were used in developing the IAT (American Psychological Association, 2013). The survey asks questions such as: Do you feel preoccupied with the Internet? Do you feel the need to use the Internet with increasing amounts of time to achieve satisfaction? Do you feel restless, moody, depressed, or irritable when attempting to cut back, or stop Internet use? Responses are based on a five-point Likert scale; 1 *rarely,* 2 *sometimes,* 3 *often,* 4 *very often,* and 5 *always,* and scores range from 0 to 100, indicating various levels of severity. The minimum score is 20 and the maximum total score is 100. An overall score of 40 to 69 indicates a high rate of internet addiction, and 70 to 100 indicates a severe rate of internet addiction). For the present study, a total score derived from the Internet Addiction Test was used to measure levels of Internet addiction. While other studies have used categories to define the scores (average users, problematic users), the current study reported levels of addiction as a total score to indicate participant's Internet addiction level.

**Reliability.** Examination of the internet addiction test has shown strong internal consistency (α= .90 – .93) and good test-retest reliability ($r$ = 0.85) (Young, 1998). Jelenchick et al. (2010) examined the psychometric properties of the IAT among 215 college students aged 18-20 in the United States. Internal consistency was confirmed by calculating Cronbach's alpha and found to be 0.91 and 0.83, respectively. There was a moderate linear correlation between the two factors ($r$ = 0.57).

**Validity.** Jelenchick et al. (2010) performed a psychometric analyst of the Internet addiction test. The sample consisted of 215 participants, aged 18-20 years. Using explanatory factor analysis of Internet addiction test scores, the study identified two types of usage; *dependent use* and *excessive use* which accounted for 91% of the total variance. Problematic users scored higher on both the *dependent use* ($1.7 \pm 1.3$ versus $0.9 \pm 0.4$, $p < 0.0001$) and *excessive use* ($3.3 \pm 1.5$ versus $1.9 \pm 0.6$, $p < 0.0001$) factors as compared to *average users*. *Dependent use* accounted for 73% of the variance, with the following construct loading most strongly: *feeling depressed, moody or nervous when offline,* or *acting annoyed if bothered when online,* and *choosing to spend time online over going out with others. Excessive use* accounted for 17% of the variance, with the following constructs loading most strongly: *staying online longer than intended, saying just a few more minutes when online,* and *trying to cut down on online time,* and *grades or schoolwork suffering from time spent online.* This high degree of variance explained strong inter-item correlation and theoretical consistency of the Internet addiction test as a valid instrument for assessing Internet addiction among college students. The Internet addiction test is s in the public domain (Young, 1998). However, I contacted the author of the scale and requested permission to use it in this study.

***Nomophobia Questionnaire***

Nomophobia was measured using the nomophobia questionnaire (Yildirim & Correia, 2015). The questionnaire was developed to assess severity of phobia without mobile phone contact. The first phase of development was a qualitative exploration of nomophobia through semi-structured interviews. The sample consisted of nine

undergraduate students aged 19- 24 years. Items for the questionnaire were created using statements that were recurrently made by interviewees. Four dimensions or subscales of nomophobia were identified: *not being able to communicate, losing connectedness, not being able to access information,* and *giving up convenience*. These findings were developed into a 20 items scale in which total scores are calculated by summing up responses. Although the author identified four themes or subscales, total scores are used to report levels of nomophobia. Scores range from 20-140, with higher scores corresponding to greater nomophobia severity. A total score between 21-59 indicates a mild level of nomophobia, scores between 60-99 indicate a moderate to severe level of nomophobia, and scores higher than 100 indicate severe nomophobia. The questionnaire takes 10-15 minutes to complete. For the current study nomophobia will be reported as a total score. Responses are reported using a 7-point Likert scale (1 strongly agree to 7 strongly disagree).

**Reliability.** Explanatory factor analysis revealed 4 factors: not being able to communicate (6 items), losing collectedness (5 items), not being able to access information (4 items), and giving up convenience (5 items). Cronbach's alpha reliability coefficient for the full questionnaire was .94. The alpha for the factors were .93, .87, .82, and .81, respectively (Yildirim & Correia, 2015).

Lee et al. (2018) examined the reliability of the Nomophobia Questionnaire comparing it to the Obsessiveness Content Scale of the Minnesota Multiphasic Personality Inventory-2. The Obsessiveness Content scale of the Minnesota Multiphasic Personality Inventory was designed to identify individuals with obsessive thoughts using

16 dichotomous items. The sample consisted of 397 undergraduate students and used two models to test reliability. The first model looked at one factor from the Obsessive Content Scale (obsessiveness) and one from the nomophobia questionnaire (not having a mobile phone). The second model looked at obsessiveness and four items extracted from the 20-item nomophobia questionnaire: *giving up convenience, not being able to communicate, not being able to access information,* and *losing connectedness.* Cronbach's alphas were .94 for the one factor model and .92, .87, .85, and .83 for the four-construct model.

**Validity.** Lee et al. (2018) examined validity of the nomophobia questionnaire by comparing it to the Obsessiveness Content Scale of the Minnesota Multiphasic Personality Inventory-2. Confirmatory factory analysis was used to test whether the scales would relate. Confirmatory factor analysis is used to test whether measures of a construct are consistent with a researcher's understanding of the nature of a construct. Two models were tested. The first assessed whether a single nomophobia scale item and a single Obsessiveness Content scale item would relate. There was a positive relationship with a moderate effect size ($r = 0.37$, $p < 0.01$). An obsessive individual displayed more anxiety from not having a mobile phone (or vice versa). The second model assessed the relationship between a four-factor nomophobia scale and the Obsessiveness Content Scale. This model revealed a more nuanced relationship between obsessiveness and the four components of the nomophobia questionnaire. There was a positive relationship with a medium effect size ($r = .60$, $p < 0.01$). Fear of *giving up convenience,* and *not being able to communicate,* had moderate correlations with obsessiveness. The fear of *not being able to access information,* and *losing connectedness* had small correlations with

obsessiveness. These findings provide evidence to support convergent validity of the Nomophobia Questionnaire.

## Data Analysis Plan

The Statistical Package for Social Sciences (SPSS) version 25.0 was used for data analysis. Standard (enter method) multiple regression was used to determine the extent to which race, and collectivistic/individualistic attitudes predict social media use, internet addiction, and nomophobia. A self-reported demographic form was provided to assess race as one of the inclusion criteria is to self-identify as either White or Black. Data was screened for inconsistences in participant responses such as duplicate responses, straight-lining (selection of the first option for each question) and Christmas-trees (responses selected to create a visual pattern. Participants were informed of the amount of time it would take to complete the survey. Surveys that were incomplete were not included in the final data analysis.

### *Research Questions and Hypotheses*

Research Question 1: To what extent do race and collectivistic/individualistic attitudes, as measured by the Horizontal & Vertical Individualism & Collectivism II scale, predict internet addiction, as measured by Internet Addiction Test, while holding other predictors constant?

$H_{01}$: Race and collectivistic/individualistic attitudes are not predictors of internet addiction.

$H_1$: Race and collectivistic/individualistic attitudes are predictors of internet addiction.

Research Question 2: To what extent do race and collectivistic/individualistic attitudes, as measured by Horizontal & Vertical Individualism & Collectivism II scale predict nomophobia, as measured by Nomophobia Questionnaire while holding other predictors constant?

$H_{02}$: Race and collectivistic/individualistic attitudes are not predictors of nomophobia.

$H_2$: Race and collectivistic/individualistic attitudes are predictors of nomophobia.

Assumptions for multiple regression was tested using SPSS prior to the regression analysis (i.e., normality, linearity, homoscedasticity, multicollinearity, and independence of residuals). Normality uses Q-plots to determine if data has been drawn from a normally distributed sample population. Linearity uses scatter plots to determine whether no or little linearity is present. Linear regression analysis requires that all linear combinations of the variables be normally distributed. Homoscedasticity is an assumption of equal or similar variances in different groups being compared. A scatterplot of residuals was used to test for Homoscedasticity. Homoscedasticity tests are sensitive to dissimilarities and any uneven variances result in skewed test results. Multicollinearity refers to predictors that are correlated with other predictors (redundant factors). Multicollinearity will be tested using Variance Inflation Factor (VIF) values. VIF explains what percentage the variance is inflated for each coefficient. Independence of residuals was examined using the Durbin-Watson *d* test. The Durbin Watson test is a statistical test for autocorrelation in the residuals from a regression analysis. Values for 0 to less than 2 points to positive autocorrelation. Values from 2 to 4 means negative

autocorrelation.

Standard multiple regression analyses (enter method) were used to determine the relationships between race, cultural attitudes (individualism/collectivism), social media use, internet addiction and nomophobia. This statistical test was appropriate as it can provide a logical base for association between two or more variables (Salkind, 2010). Utilization of a multiple regression analysis enabled each predictor to be assessed as though it were entered after each independent variable was entered. By such means each variable was assessed by what it offers to the prediction of the other variables entered in the model (Grant, 2021). The four subscales identified in the Horizontal vertical individualism and collectivism (HI, HC, VI, VC) along with race served as predictor variables of Internet addiction, and nomophobia. The theoretical framework and relevant literature suggest that individualistic and collectivistic cultural values are predictive of Internet addiction, and nomophobia. Therefore, using a multiple regression analysis to assess variable's relationship to another was appropriate in the current study.

## Threats to Validity

Self-selection to participate in research posed a threat to validity as there was no way to confirm whether characteristics of the sample were representative of the entire population. This study utilized a convenience sample which is a type of non-probability sampling that involves drawing the sample from a part of the population that is easy to contact or reach. Using a convenience sample can result in sampling bias which occurs as the sample may not be representative of the overall population. This may result in low external validity. There was also the possibility that individuals who participate in

research are inherently different from those in the population who do not volunteer for research. This limits the generalizability of results. The Covid-19 pandemic also posed an external threat to validity as social distancing and quarantine may provide more opportunities for individuals to utilize the internet and social media, increasing daily social media usage. Internet-based research can also be vulnerable to nonresponse bias resulting from participants leaving survey items incomplete. To reduce nonresponse bias, Alchemer was equipped with item response validation which ensured that participants answered all survey questions. Another threat to validity was history, this refers to any event other than the independent variable that occurs in or out of the study that may account for results within the study (e.g., events in the participant's personal life, in the news, or in the weather) that could alter response questions in the study.

**Ethical Procedures**

Data was collected anonymously. Participant were asked about personal feelings and behaviors experienced in their daily activities, as a result the study posed minimum risk (National Research Council, 2014). While it was not anticipated that participating would pose risks above and beyond what is normally encountered in everyday life, participants were informed in the consent form that expressing their feelings may evoke emotional stress. To address this risk participants were referred to Mental Health America (http://www.mentalhealthamerica.net/search/node) on the consent form and debriefing page. Debriefing occurred for every participant to remove any adverse consequences participants may have experienced. The informed consent form provided participants with a description of the study, risk and benefits of participation, and

participants' rights to privacy that would be collected absent any personal identification information. Participants were informed that there were no consequences for withdrawing from the research at any time. Data was collected autonomously through Alchemer. The Alchemer survey platform undergoes regular scans to ensure no vulnerabilities exist in their systems, and firewall systems protect their servers. Alchemer possesses certificates which ensure compliance with United States government security and Health Insurance Portability and Accountability Act (HIPAA). Raw data was downloaded from Alchemer into SPSS for analysis and stored on a password-protected computer accessible only by me. Data will be stored for a minimum of five years on a password-protected flash drive in a secure and locked safe that only I can access.

## Summary

This study was a quantitative nonexperimental survey design with a target population of U.S. undergraduate college students aged 18-22 years, to explore the relationships between race, cultural attitudes, Internet addiction, and nomophobia. The surveys were web-based and Alchemer was used to distribute them. Standard multiple linear regression was used to analyze the data. Threats to validity and ethical considerations have been addressed. Chapter 4 provides a detailed discussion of the data analysis and research findings.

# Chapter 4: Results

The purpose of this quantitative survey study was to examine the extent to which race and cultural attitudes predict Internet addiction and nomophobia. Two research questions were tested using multiple linear regression:

- Research Question 1: To what extent do race and collectivistic/individualistic attitudes, as measured by the Horizontal & Vertical Individualism & Collectivism II scale, predict internet addiction, as measured by Internet Addiction Test, while holding other predictors constant?
- Research Question 2: To what extent do race and collectivistic/individualistic attitudes, as measured by Horizontal & Vertical Individualism & Collectivism II scale predict nomophobia, as measured by Nomophobia Questionnaire while holding other predictors constant?

In this chapter, a description of the data collection and screening procedures is provided. Descriptive statistics and an evaluation of statistical assumptions are also provided. The chapter concludes with a summary of the results of the multiple regression analyses.

## Data Collection

Data collection occurred across a 3-day period in January 2023. Study participants were recruited from the Alchemer participant platform. Based on the inclusion criteria, participants were U.S. citizens, identified as either Black or White, were between 18–24, and currently enrolled in an undergraduate program (i.e., traditional on-campus, online, and hybrid format). The survey took place in an online format and began with the consent form that explained the purpose of the study, which was to explore the relationship

between race, cultural attitudes, Internet addiction and nomophobia. The consent form also included a description of procedures, the voluntary nature of the study, risks and benefits, privacy, and contact information. The survey was anonymous; no identifying information was collected to protect participant privacy. Respondents who did not provide consent were directed to the end of the survey. Respondents who did provide consent were directed to two screening questions designed with a skip logic feature that disqualified participants who did not meet the inclusion/exclusion criteria. Respondents who did not meet the inclusion/exclusion criteria were directed to a thank you page that ended the survey.

Respondents who met all criteria were directed to the survey portion of the study. All survey questions were equipped with a forced validation feature that required participants to answer all survey questions to prevent missing data. After all survey questions were answered, participants were directed to a debriefing page. The debriefing page explained the use of incomplete disclosure, the study's purpose, and the nature of the study. Participants could withdraw their data without penalty after the study's true nature was disclosed. Alchemer did not reveal how many respondents met the inclusion/exclusion criteria or chose to withdraw their data after being debriefed, so it is not possible to calculate the response rate.

The forced validation procedure alleviated the need to remove responses to missing or incomplete data. The total sample size for the study was $N = 250$, providing adequate power with an alpha level of .05, power 0.95, effect size of .15, and five predictor variables (i.e., race, horizontal collectivism, vertical collectivism, horizontal

individualism, and vertical individualism).

## Demographic Data

All participants reported being between the ages of 18- 22 ($n$ = 250, 100%). All participants also reported being enrolled in a 4-year undergraduate program ($n$ =250). One hundred and ten participants were Black/African American ($n$ = 110, 44%), and 140 were White/European American ($n$ =140, 56%). A convenience sampling method was used in this study, and it is unknown whether the sample characteristics are representative of the U.S. undergraduate population. Accordingly, the results of the study cannot be generalized to all U.S. undergraduate students. Although probability sampling would increase the sample representativeness and generalizability, the constraints specific to conducting research online make random sampling unavailable; external validity is therefore limited.

## Results

### Descriptive Statistics

The total sample included 250 students who completed the study. Means and standard deviations were calculated for the predictor variables related to collectivistic/individualistic attitudes: horizontal collectivism, vertical collectivism, horizontal individualism, and vertical individualism (see Table 1). Means and standard deviations were also calculated for the following outcome variables: Internet addiction ($M$ = 45.56, $SD$ = 20.01) and nomophobia ($M$ = 97.67, $SD$ = 21.77). Internal consistency of the study variables was assessed using Cronbach's alpha. The Cronbach's α value for horizontal individualism was .75 (>.70), vertical individualism was .73 (>.70), and

horizontal collectivism was .73 (>.70), which indicated satisfactory internal consistency. The Cronbach's α value for vertical collectivism was .77 (>.70), which indicated moderate internal consistency. Finally, the Cronbach's α value for nomophobia was .92 (>.80) and for Internet addiction it was .92 (>.80), which indicated high internal consistency.

**Table 1**

*Psychometric Properties of Study Variables*

| Scale | *M* | *SD* | Range | Cronbach's α |
|---|---|---|---|---|
| Horizontal Individualism | 27.88 | 5.31 | 10-36 | .75 |
| Vertical Individualism | 22.71 | 6.45 | 4-36 | .73 |
| Horizontal Collectivism | 27.33 | 5.42 | 6-36 | .73 |
| Vertical Collectivism | 27.46 | 5.60 | 9-36 | .77 |
| Nomophobia | 97.67 | 21.17 | 32-140 | .92 |
| Internet Addiction | 45.56 | 20.01 | 4-95 | .92 |

To identify the relationships between variables of the present study, Pearson's product moment correlation coefficients were calculated (see Table 2). Nomophobia was significantly and positively correlated with internet addiction ($r$ = .49, p = .000). Vertical individualism, horizontal collectivism, and vertical collectivism were all significantly and positively correlated with internet addiction. Internet addiction was significantly positively correlated with vertical individualism ($r$ = .33, $p$ = .000), and negatively correlated with race ($r$ = -.12, $p$ = .043). Horizontal individualism was significantly positively correlated with vertical individualism, horizontal collectivism, and vertical collectivism. Lastly, horizontal collectivism was significantly positively correlated with vertical collectivism ($r$ = .46, $p$ = .000).

**Table 2**

*Pearson's Product Moment Correlation Coefficients*

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1. Nomophobia | - | | | | | | |
| 2. Internet Addiction | .49** | - | | | | | |
| 3. Horizontal Individualism | .09 | -.10 | - | | | | |
| 4. Vertical Individualism | .37** | .33** | .22** | - | | | |
| 5. Horizontal Collectivism | .16* | -.01 | .30** | -.00 | - | | |
| 6. Vertical Collectivism | .29** | .06 | .25** | .23** | .46** | - | |
| 7. Race | -.07 | -.12* | -.12* | -.03 | -.03 | -.01 | - |

The Kolmogorov-Smirnov tests indicate that only Internet Addiction follows a normal distribution, $D$ (250) = .04, $p$ = .200 (see Table 3). The assumption of multicollinearity was checked from the correlation table in multiple linear regression analysis. Tabachnick and Fidell (2013) suggested that there should be some relationship between the dependent variable and at least one independent variable. In this case, nomophobia showed significant positive correlation with vertical individualism ($r$ = .37, $p$ = .000), horizontal collectivism ($r$ = .16, $p$ = .011), and vertical collectivism ($r$ = .29, $p$ = .000). Correlation analysis also showed that Internet addiction has significant positive correlation only with vertical individualism ($r$ = .33, $p$ = .000).

**Table 3**

*Kolmogorov-Smirnov Test of Normality*

| Variable | Statistic | *df* | *p* |
|---|---|---|---|
| Horizontal Individualism | .08 | 250 | .000 |
| Vertical Individualism | .07 | 250 | .001 |
| Horizontal Collectivism | .08 | 250 | .000 |
| Vertical Collectivism | .08 | 250 | .000 |
| Race | .37 | 250 | .000 |
| Nomophobia | .06 | 250 | .013 |

| | | | |
|---|---|---|---|
| Internet Addiction | .04 | 250 | .200 |

Multicollinearity can also be checked by collinearity diagnostic of regression analysis. According to Tabachnick and Fidell (2013), if the tolerance value is above 0.1 or the VIF is below 10, it is suggested that there is a high correlation between independent variables. Multicollinearity was also checked by the collinearity diagnostic in the regression analysis. According to Tabachnick and Fidell (2013), if the tolerance value is above 0.1 or the VIF is below 10, it is suggested that there is a high correlation between independent variables. The results of collinearity diagnostics are shown in Table 4. The values of tolerance and VIF show that the assumption of multicollinearity was met.

**Table 4**

*Tolerance and VIF Values for the Predictor Variables*

| Predictor Variables | Tolerance | VIF |
|---|---|---|
| Race | .98 | 1.01 |
| Horizontal Individualism | .83 | 1.19 |
| Vertical Individualism | .88 | 1.12 |
| Horizontal Collectivism | .72 | 1.38 |
| Vertical Collectivism | .72 | 1.37 |

**Evaluations of Statistical Assumptions**

The Durbin-Watson statistic was used to assess the assumption that the values of residuals are independent. Tabachnick and Fidell (2013) suggested that the value should be between 1 to 3. In this case the value of Durbin-Watson was 2.16 for Internet addiction, and 2.03 for nomophobia, which suggested that the assumption of independence was met.

The assumption of normality was evaluated through visual inspection of histograms. The histogram showed a curved graph, indicating normality. The Normal PP Plots were created to check the assumption of independence of residuals. P-P plots showed that residuals were close to the straight line for Internet addiction and nomophobia. For results see Appendix B.

Homoscedasticity was examined using scatterplots. The variance of the residuals was constant. The scatterplot showed a rough rectangle residual point for both Internet addiction and nomophobia indicating that assumption of equal variance in the error was met. The scatterplots are shown in Appendix C.

**Standard Multiple Regression Analyses**

Two separate standard (enter method) multiple regression analyses were conducted for each criterion variable: Internet addiction and nomophobia, assessing the relative strength of the five predictor variables (race, horizontal individualism, vertical individualism, horizontal collectivism, and vertical collectivism).

As noted in Chapter 3, higher scores on horizontal individualism indicate that one sees the self as fully autonomous and believes that equality between individuals is ideal. Higher scores on vertical individualism indicate that one sees the self as fully autonomous but recognizes and accepts that inequality exists among individuals. Higher scores on horizontal collectivism indicate that one sees the self as part of a collective but perceives all members within the collective as equal. Higher scores on vertical collectivism indicate that one sees the self as a part of a collective and is willing to accept hierarchy and inequality within that collective. The Internet addiction score measures

pathological internet use with higher scores indicating higher levels of pathological use. The nomophobia score measures the severity of phobia without mobile phone contact with higher scores indicating higher nomophobia severity.

**Predicting Internet Addiction**

The first research question explored the extent to which race and collectivistic/individualistic attitudes, as measured by the Horizontal & Vertical Individualism & Collectivism II scale, predict internet addiction, as measured by the Internet Addiction Test, while holding other predictors constant. The results showed that the overall model was significant, $F$ (5, 244) = 9.542, $p$ = .000, $R^2$= .164 (see Table 5 and 6). Therefore, the null hypothesis was rejected. Race was statistically significant and negative in predicting internet addiction ($b$ = -5.68, β = -.14, $p$ = .017). For race, Black was coded as 1 and White was coded 2. This result showed that African Americans tended to score higher that Caucasians on Internet addiction. On average, there was a -.14 unit decrease in the Internet addiction scores when the participant was Caucasian.

Horizontal individualism ($b$ = -.82, β = -.22, $p$ = .000) was found to be a negative and significant predictor of Internet addiction. This indicated that for every one-unit increase in the horizontal individualism score, there was a -.220 decrease in the Internet addiction score. Vertical individualism ($b$ = 1.15, β = .372, $p$ = .000) was a positive and significant predictor of Internet addiction. This indicated that for every one-unit increase in the vertical individualism score, there was a .372 increase in the Internet addiction score.

**Table 5**

*ANOVA Results for Internet Addiction*

| Model | *SS* | *df* | *R* | $r^2$ | *MS* | *F* | *p* |
|---|---|---|---|---|---|---|---|
| Regression | 16306.855 | 5 | .404 | .164 | 3261.371 | 9.542 | .000 |
| Residual | 83396.861 | 244 | | | 341.790 | | |
| Total | 99703.716 | 249 | | | | | |

**Table 6**

*Regression Coefficient of Race, Horizontal Individualism, Vertical Individualism, Horizontal Collectivism, and Vertical Collectivism on Internet Addiction*

| Variables | *b* | *SE* | β | *t* | *p* |
|---|---|---|---|---|---|
| Constant | 45.223 | 9.539 | | 4.741 | .000 |
| Race | -5.688 | 2.374 | -.141 | -2.396 | .017 |
| Horizontal Individualism | -.827 | .241 | -.220 | -3.432 | .001 |
| Vertical Individualism | 1.153 | .193 | .372 | 5.987 | .000 |
| Horizontal Collectivism | .164 | .254 | .044 | .644 | .520 |
| Vertical Collectivism | .059 | .245 | .016 | .239 | .811 |

**Predicting Nomophobia**

The second research question explored the extent to which race and collectivistic/individualistic attitudes, as measured by the Horizontal & Vertical Individualism & Collectivism II scale, predict nomophobia, as measured by the Internet Addiction Test, while holding other predictors constant. The results showed that the overall model was significant, $F$ (5,244) = 12.16, $p$ = .000, $R^2$= .200 (see Table 7 and 8). Therefore, the null hypothesis was rejected.

Vertical individualism ($b$ = 1.15, β = .35, $p$ = .000) was found to be positive and a significant predictor of nomophobia. This demonstrated that for every one-unit increase in the vertical individualism score, there was a .351 increase in the nomophobia score. Vertical collectivism ($b$ = .67, β = .17, $p$ = .008) was a positive and significant predictor

of Internet addiction. This demonstrated that for every one-unit increase in the vertical collectivism score, there was a .179 increase in the nomophobia score.

**Table 7**

*ANOVA Results for Nomophobia*

| Model | *SS* | *df* | *R* | $r^2$ | *MS* | *F* | *p* |
|---|---|---|---|---|---|---|---|
| Regression | 122287.84 | 5 | .447 | .200 | 4457.57 | 12.16 | .000 |
| Residual | 89385.24 | 244 | | | 366,33 | | |
| Total | 111673.10 | 249 | | | | | |

**Table 8**

*Regression Coefficient of Race, Horizontal Individualism, Vertical Individualism, Horizontal Collectivism, and Vertical Collectivism on Nomophobia*

| Variables | *b* | *SE* | β | *t* | *p* |
|---|---|---|---|---|---|
| Constant | 53.850 | 9.876 | | 5.453 | .000 |
| Race | -2.777 | 2.458 | -.065 | -1.130 | .260 |
| Horizontal Individualism | -.260 | .250 | -.065 | -1.041 | .299 |
| Vertical Individualism | 1.151 | .199 | .351 | 5.774 | .000 |
| Horizontal Collectivism | .390 | .263 | .100 | 1.483 | .139 |
| Vertical Collectivism | .677 | .254 | .179 | 2.668 | .008 |

## Summary

Two multiple regressions were conducted to determine the extent to which race, and collectivistic/individualistic attitudes predicted Internet addiction and nomophobia among college students. The results revealed that race was a significant predictor of Internet addiction. African Americans showed higher Internet addiction severity when compared to Caucasians. Race, however, was not a predictor of nomophobia. Vertical individualism and horizontal individualism had a positive significant relationship with

Internet addiction. That is, as vertical individualism and horizontal individualism increased Internet addiction severity increased. Vertical individualism and vertical collectivism were both significant predictors of nomophobia. Whereby, increases in vertical individualism and vertical collectivism was associated with increases in the severity of nomophobia. Chapter 5 includes interpretations of the findings, limitations, recommendations for future research, and implications for social change.

# Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this study was to examine the extent to which race and collectivistic/individualistic attitudes predicted Internet addiction and nomophobia. Forty five percent of college students in the United States report being online almost constantly (Anderson & Jiang, 2018). Smartphones serve as a primary source of communication, socialization, and access to current events. Internet addiction is the inability to control one's Internet use to the extent that it leads to stress, anxiety, and impairment of daily activity (Young, 1998). Nomophobia is an anxiety induced fear resulting from being without a smartphone or being unable to be reached on a smartphone (Braggazi et al., 2014). Race or cultural attitudes are rarely explored as a predictor of Internet addiction and nomophobia. The current study addressed this gap in the literature by examining the influence of race and collectivistic/individualistic attitudes on Internet addiction and nomophobia.

A quantitative non-experimental design was used to examine the effect of five predictor (independent) variables on two outcome (dependent) variables. Online surveys were distributed to U.S. undergraduate students aged 18 to 22 who were enrolled in a 4-year undergraduate program. The predictor variables were race, horizontal individualism (seeing the self as autonomous but believing equality is ideal), horizontal collectivism (seeing the self as part of a collective but perceiving all members of the collective as equal), vertical individualism (seeing the self as fully autonomous and accepting inequality), and vertical collectivism (seeing the self as a part of a collective and being willing to accept inequality). The two outcome variables were Internet addiction and

nomophobia.

A multiple linear regression model revealed that race was a significant predictor of Internet addiction, with African American students having higher levels of Internet addiction compared to White students. Race was not a significant predictor of nomophobia. Higher levels of horizontal individualism significantly predicted lower levels of Internet addiction meaning as horizontal individualism increased Internet addiction scores decreased. Higher levels of vertical individualism significantly predicted Internet addiction such that as vertical individualism increased, so did Internet addiction scores. Horizontal collectivism and vertical collectivism were not significant predictors of Internet addiction meaning students who were horizontal and vertical collectivists had lower Internet addiction scores. Higher levels of vertical individualism and vertical collectivism significantly predicted higher levels of nomophobia; as vertical individualism and vertical collectivism increased, so did nomophobia levels. In this chapter the interpretations of these research findings are discussed, followed by the limitations of the study, recommendations for future research, and implications for social change.

## Interpretation of Findings

### Race

African Americans students were found to have higher levels of Internet addiction when compared to Caucasian students. Similar research found that when compared to ethnic minorities (Asian, African, and Latino Americans), European Americans exhibited more individualistic behaviors when using the Internet (Flores, 2011), whereas African

Americans used the Internet for more collectivistic purposes, such as calls for social injustice (Murphy et al., 2016). The literature suggests that Black individuals are more collectivistic, and White individuals more individualistic (Acevedo, 2003). Individualists use the Internet to maximize personal utility, whereas collectivists use the Internet to share ideas and opinions more than for personal purposes. Thus, I hypothesized that White individuals would demonstrate higher levels of Internet addiction as individualistic Internet use is more recreational and personal in nature resulting in more time spent online. However, the findings were the opposite.

One explanation for the results may be that African American students have a harder time adjusting to college because many of them are first-generation college students. One in 3 college students are first generation college students and ethnic minorities (Hispanic, Black, American Indian, Alaskan Native) are more likely than other races to belong to this demographic (Nam, 2023). Adults who have at least one college-educated parent are more likely to complete college when compared with adults with less educated parents (Pew Research Center, 2021). Further, 70% of adults aged 22 to 59 with at least one parent holding a bachelor's degree are more likely themselves to complete a bachelor's program. In contrast, only 26% of their peers who do not have a college-educated parent completed a bachelor's degree program. Not having a support system or someone to explain the challenges faced when adjusting to college may also contribute to unhealthy Internet use. These disparities may explain why African American students in the current sample showed higher Internet addiction.

I also hypothesized that because Whites are more individualistic, they would have

higher levels of nomophobia when compared to African Americans, but race did not significantly predict nomophobia. Nomophobia is defined as an anxiety induced fear of being without one's mobile device or being unable to be reached on one's mobile device (Braggazi et al., 2014). Today's college students have grown up with smartphones and may utilize them for more similar purposes despite differences in race/ethnicity. Statista (2023) investigated smartphone access by ethnicity and found that 94 % of White, 94 % of Black, and 95% of Hispanic adolescents have smartphones. Smartphones function as cameras, phones, and minicomputers. Therefore, increased smartphone use among young adults places them at risk for nomophobia regardless of race.

The literature holds that Whites are more individualistic and Blacks are more collectivistic (Flores, 2011; Murphy et al., 2016; Villanti et al., 2017). As such, I hypothesized that race and cultural attitudes would predict Internet addiction and nomophobia; however, there were no differences between race and cultural attitudes. Among the college students in the current study, Black students were not found to be more collectivistic, and White students were not found to be more individualistic. One explanation may be that transitioning to college involves learning to live and work independently, which would make one more individualistic Stephens & Townsend (2017).

**Collectivistic/Individualistic Attitudes**

Horizontal individualism had a significant negative relationship with Internet addiction. That is, as horizontal individualism scores increased Internet addiction severity decreased. Horizontal individualists see the self as independent, self-reliant, and fully

autonomous (*e.g., I rely on myself most of the time; I rarely rely on others*). Miyamoto and Schwarz (2006) found that individualistic cultures place a greater emphasis on the informational function of communication, whereas collectivistic cultures place greater emphasis on the relational function. Horizontal individualists within the current sample may be using the Internet for informational purposes, therefore reducing time spent online and risk of Internet addiction. Informational purposes such as obtaining an address, finding a doctor or a recipe is singular in occurrence and should equate to less time spent online. This may explain why students in the sample who had higher levels of horizontal individualism showed lower levels of Internet addiction.

Vertical individualism was a significant positive predictor of Internet addiction. Vertical individualists view the self as autonomous but recognize and accept that inequality exists among individuals (*e.g., competition is the law of nature*). Triandis (1995) found that individualists were more likely to see their environment as a variable that should change to fit them. In accordance with this cultural perspective the vertical individualist may view the Internet as a resource to be used without thinking about regulating time spent online. The literature supports that unregulated Internet use can lead to negative mental health outcomes (Anshari et al., 2019). Arpaci et al. (2018) suggests that individualists face higher socialization problems and therefore prefer online social environments. The vertical individualistic college student may be prone then to spending more hours online, increasing their vulnerability to Internet addiction. I hypothesized that vertical individualism would be a significant predictor of Internet addiction. The data supported this hypothesis as students who were vertical individualists reported higher

levels of Internet addiction. In fact, vertical individualism was the strongest predictor of Internet addiction. Another explanation may be that within a college environment, as students develop the capacity to work independently and be more responsible for themselves, they become more individualistic.

Horizontal and vertical collectivism were not significant predictors of Internet addiction. Horizontal collectivism is seeing the self as part of a collective but perceiving all members of the collective as equal (*e.g., I feel good when I collaborate with others*). Vertical collectivism is seeing the self as a part of a collective and being willing to accept inequality (*e.g., It's my duty to take care of my family, even if I sacrifice what I want*). The literature holds that individualists are more prone to Internet addiction because individualistic Internet use is more recreational, resulting in more time spent online. I hypothesized that college students with higher levels of collectivism would have lower levels of Internet addiction. The results revealed that both vertical and horizontal collectivism did not predict Internet addiction, that is students who see themselves as part of the collective but view members as equal, as well as those who see themselves as part of the collective but accept inequality, had lower Internet addiction scores. Stavropoulos et al. (2021) suggest that people in collectivistic cultures utilize the Internet for group goals when compared to people in individualist cultures. As such, the vertical and horizontal collectivistic students' Internet uses would be restricted to activities that serve in-group goals (e.g., collaboration on school projects, coordinating study groups, calls for social justice). Once in group goals are met, Internet use should decrease equating to less time spent online. This may explain why both vertical and horizontal collectivism did not

predict Internet addiction among students in the current sample.

Vertical individualism is seeing the self as fully autonomous but recognizing and accepting inequality (e.g., *competition is the law of nature).* No studies have looked at cultural attitudes as a predictor of nomophobia. The literature suggests that excessive smartphone use is a predictor of nomophobia (Anshari, 2019). Chapman and Lahav (2008) investigated cross-cultural differences in social media patterns and found that individualists showed more user-centric Internet use, whereas collectivists displayed more in-group-oriented Internet use. I hypothesized that vertical individualism would predict nomophobia. Vertical individualism was a significant positive predictor of nomophobia. That is, higher levels of vertical individualism predicted higher levels of nomophobia. Those with a vertical individualistic orientation see the self as having a high-power status relative to others. Thus, they may not see a need to regulate their smartphone use.

Vertical collectivism was also a positive and significant predictor of nomophobia. Participants' higher levels of vertical collectivism predicted higher levels of nomophobia. Vertical collectivism is seeing the self as a part of a collective and accepting inequality (*e.g., It's my duty to take care of my family, even if I sacrifice what I want).* This willingness to accept inequality may increase the use of the internet as a vehicle for self-expression outside of cultural expectations. I hypothesized that collectivists would report lower levels of nomophobia. Vertical collectivists see the self as dutiful and focus on fulfilling in-group goals. To this end, the students with higher levels of vertical collectivism may be using their smartphones for things such as staying in contact with

friends, family, and/or working on and coordinating group projects. These students may view their smartphones as an essential resource for maintaining in-group relationships, which may explain why students with higher levels of vertical collectivism in the current study showed higher levels of nomophobia.

The vertical dimension of cultural attitudes has to do with hierarchy, or more specifically, recognizing and/or accepting inequality. For the vertical individualist who holds such ideals as *competition is the law of nature*, the smartphone may be a means of maintaining their hierarchy or a tool that gives them an edge on their competition. In contrast, for the vertical collectivist who holds ideals such as *it's my duty to take care of my family, even if I sacrifice what I want,* smartphones may be a means of navigating the hierarchy to meet group-centered goals (e.g., accessing job aps, calls for social justice, organizing study groups). This explains why both *vertical* collectivistic and individualistic students showed significantly higher nomophobia levels.

If young adult college students who display high levels of vertical individualism and collectivism are more likely to experience nomophobia, then this implies that cultural attitudes do not influence nomophobia. Thus, cultural attitudes appear to be unrelated to nomophobia since both individualists and collectivists experienced nomophobia.

## Limitations of the Study

The present study was limited to U.S. college students 18-22 currently enrolled in a 4-year undergraduate program and who self-identified as White or Black. Therefore, the results may not generalize beyond this population. It is possible that students who are older, parents, or international students may use the Internet and/or smartphones

differently. Twenty-four percent of the U.S. college population is comprised of international students, and 26 % of students are parents (Pew Research Center, 2021). Thus, a large segment of the U.S. college student population was not included in the present study. Thus, studying these subpopulations of college students may have produced different results.

Another limitation is the potential of response bias from using a convenience sample. People who self-select to participate in Internet-based research may be different from people who do not, thus limiting representativeness of the target population (Stroebe et al., 2018). Questionable eligibility is a threat to validity in web-based surveys. Therefore, researchers must rely on participant honesty. Although screening questions were used to minimize this threat, there is no way to determine the extent to which participants answered the screening questions honestly. In such cases it is unknown whether those who do not respond or withdraw from the study have different characteristics from the present sample (Kalain, 2008). For the present study it is unknown the extent to which response bias may have impacted the findings. Finally, although this study found significant relationships between race, cultural attitudes, Internet addiction and nomophobia, the nonexperimental nature of the present study does not allow causality to be inferred.

## Recommendations

This study addressed gaps in the literature by investigating whether race and cultural attitudes predict Internet addiction and nomophobia. It is important that future research continues to investigate how race and cultural attitudes impact Internet misuse

and smart phone dependence among young adults. Future research should continue to examine the impact of dimensions of cultural attitudes by including other races or even more specifically looking at why African American college students show higher levels of Internet addiction. This is important as the ethnic demographic across college campuses in the U.S. continues to change. According to the Pew Research Center (2022), the current U.S. college enrollment broken down by ethnicity includes 32%, Latino, 33%, Black, 37%, White, and 58% Asian. As ethnic makeup of the country evolves so should intervention/prevention resources. Future research should also explore how cultural attitudes specifically influence nomophobia. As a relatively new construct with limited research, further exploring the vertical and horizontal components of individualism and collectivism can aid mental health professionals to design intervention/prevention strategies for college students at risk of Internet addiction and nomophobia.

## Implications

This study's findings can encourage positive social change by informing mental health professionals with the knowledge to treat students most at risk of Internet addiction and nomophobia. Colleges are increasingly relying on the Internet to engage prospective and current students (Coyne et al., 2013; Peruta & Shields, 2017). The Internet has become an integral part of modern existence and most college students have grown up with the Internet and smartphones. This knowledge on race and cultural attitudes can be used to develop prevention/intervention strategies that are inclusive for students who struggle with Internet addiction and/or nomophobia.

Findings from this study indicated that students who were vertical individualists

had higher levels of Internet addiction. Students who were vertical individualists and vertical collectivists showed higher levels of nomophobia, implying that nomophobia is a concern for young adults who are both individualistic and collectivistic or that many young adults because of the prevalence of smartphones are at risk for nomophobia. The vertical dimension which represents hierarchy suggests that acceptance or awareness of inequality increases nomophobia because it provides both the vertical individualist and the vertical collectivist with a means of reaching their goals via smartphones (e.g., access dating apps, or coordinating study groups). Young adults utilize their smartphones for a plethora of reasons. As such, mental health professionals should discuss appropriate smartphone use among all young adults as the data suggest that young college students are at risks for nomophobia regardless of cultural orientation.

## Conclusion

Nomophobia and Internet addiction among college students is a growing concern for mental health professional (Kwak, Kim, & Ahn, 2022). Murthy et al. (2016) suggested that marginalized Blacks utilize social media as a platform for social justice which is more collectivistic, while Flores (2011) holds that Whites utilize the Internet for more individualistic endeavors such as establishing and maintaining romantic interest. The current study adds to the literature by providing empirical support that race predicts Internet addiction but not nomophobia. Vertical individualism is a significant predictor of Internet addiction, and vertical individualism and vertical collectivism predict nomophobia. As college campuses become more diverse it is imperative that inclusive intervention/prevention strategies are in place for students. Through such means mental

health professionals can appropriately educate and treat students most at risk of Internet addiction and nomophobia. The positive social change implications are more inclusive strategies that help college students achieve and maintain positive mental wellness.

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# Appendix A: Demographic Questionnaire

1. What gender do you identify as?
    a. Male
    b. Female
    c. Decline to answer.
2. Are you between the ages 18- 24?
    a. Yes
    b. No
3. Are you a U.S citizen?
    a. Yes
    b. No
4. Pease specify your ethnicity.
    a. White
    b. African American
    c. Latino or Hispanic
    d. Asian
    e. Native American
    f. Native Hawaiian or Pacific Islander
5. Are you currently enrolled in a four-year bachelor's education program in the United States?
    a. Yes
    b. No

# Appendix B: P-P Plots

**Figure B1**

*P-P Plot for Internet Addiction*

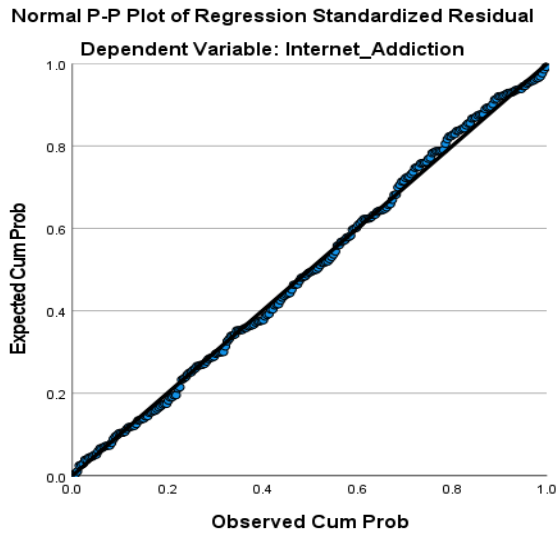
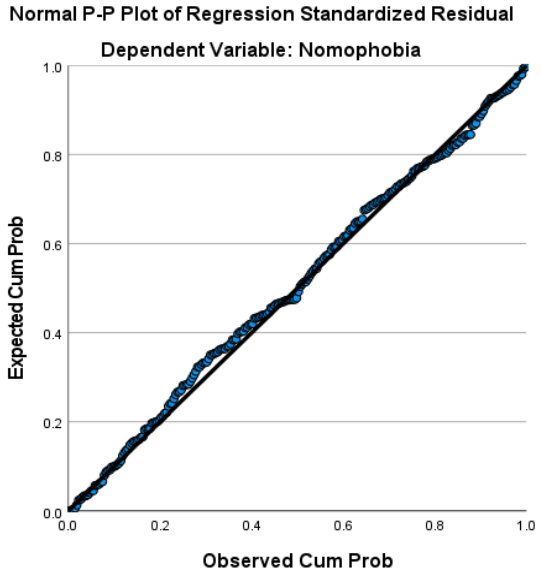



**Figure B2**

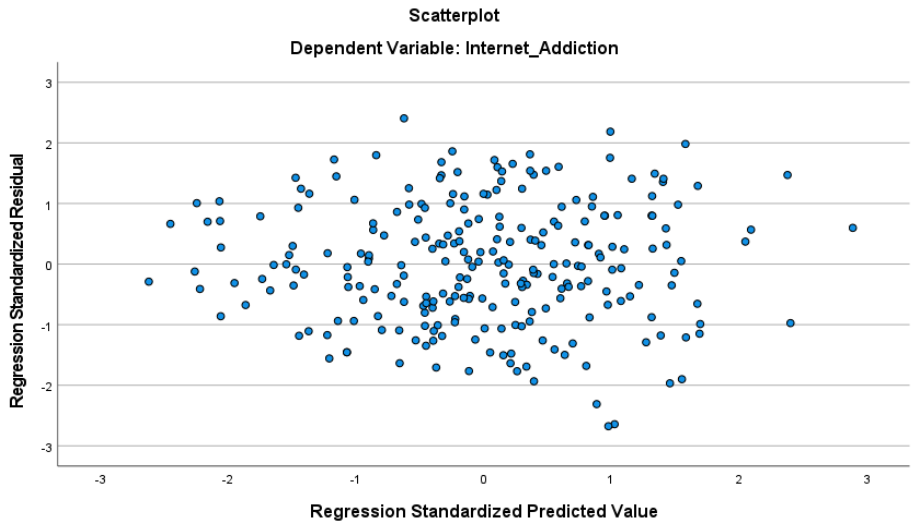
*P-P Plot for Nomophobia*



# Appendix C: Scatter Plots

## Figure C1

*Scatterplot for Internet Addiction*




## Figure C2

*Scatterplot for Nomophobia*