Applying Cultivation Theory in Determining the Relationship Between SNS Use and Optimism/Pessimism of Adults in the United States and the Moderating/Mediating Effects of Platform, Content, and Connections on this Relationship

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Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy (Ph.D.), Strategic Media

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Abstract

The purpose of this study was to determine the relationship between the degree of social networking site (SNS) use and optimism/pessimism mean scores from the Optimism/Pessimism Instrument (OPI) for SNS users who are age 18+ and live in the United States. Another purpose of the study was to determine how the main type of platform used, main type of content viewed, and number of connections mediated and/or moderates this relationship. SNSs are an increasingly prominent form of media, but little research has examined how the degree of exposure to SNSs may affect psychological states, especially in relation to the mediating or moderating effects of platform, content, and number of connections. A correlational, quantitative research design was used with a cross-sectional, analytical survey to gather data on user demographics, SNS use, and OPI mean scores. Inferential statistics were used to test the assumptions about regression, and multiple linear regression, ANOVA, stepwise linear regression, SPSS Process, and SmartPLS4 were used to determine the relationships between variables and the mediating/moderating effects therein. The results showed a significant positive linear relationship between the degree of SNS use and optimism/pessimism mean scores, wherein optimism is negatively partially mediated by content and positively partially mediated by number of connections, and pessimism is positively partially mediated by content. These results demonstrated a potential need for regulating certain types of content to counteract the negative mediating effect content has on optimism and the positive mediating effect content has on pessimism based on average hours used per day.

Keywords: cultivation analysis, cultivation theory, SNS cultivation, social media use

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Dedication

I dedicate this research to the most high God, whom I serve and through which all things are possible, to my Lord and Savior, Jesus Christ, whose death and resurrection enabled my salvation and the salvation of all mankind, and to the Holy Spirit, who counsels my steps as I continue to grow in faith and walk with Christ.

Acknowledgments

I want to express my sincere gratitude to my mentor and committee chair, Dr. Robert Mott, who truly made this moment possible through his exemplary leadership, guidance, and patience. I would also like to thank Dr. Carol Hepburn and Dr. Carey Martin for their participation, support, and guidance throughout the dissertation journey.

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List of Abbreviations

OPI-O: Optimism/Pessimism Instrument optimism mean scores

OPI-P: Optimism/Pessimism Instrument pessimism mean scores

SNS: Social networking site

CIP: Cultural Indicators Project

PLS-SEM: Partial least squares structural equation model

Chapter 1: Introduction

Overview

With the increased adoption of social networking sites (SNS) by media consumers, researchers must consider the impact SNSs have on psychological well-being. Studies have shown that the use of SNSs may contribute to the development of depression in users, especially as the degree of use increases (McNallie et al., 2020; Primack et al., 2021). Hartanto et al. (2021) posited that individuals with depression may have increased use of SNSs as opposed to SNSs developing depression in users. However, Primack et al. (2021) demonstrated that SNS use was associated with the onset of depression in users and that users with depression didn't necessarily use SNSs more. On the contrary, Sestir (2020) posited that increased SNS use would create a positive attitude change in users, known as *friendly world syndrome*, a contrasting take on George Gerbner's (1998) *mean world syndrome*. While there are varying views on the effects of SNS use, it is clear that SNSs have the potential to alter the perceptions and attitudes of users based on the degree of use.

A communication theory that may help explain this process of attitude and perception change is cultivation theory, which was developed by George Gerbner (1970). Gerbner developed the concept of cultivation by considering how mass-mediated messages impact a public audience. Based on the results of the Cultural Indicators Project (CIP), which Gerbner helped create, he concluded that the main message being portrayed on television media was one of violence. Given that television was a primary source of information for the public audience in the late 1960s and early 1970s, and the discovery that violence is overrepresented on television, Gerbner was interested in determining whether television somehow altered the perceptions or attitudes of viewers. He posited that the more television a person consumes, the more their

perceptions of violence will be skewed compared to reality. Ultimately, this cultivation effect became known as mean world syndrome (Gerbner, 1998). Given that SNS use is on the rise and competing against time spent consuming television, and with consideration of the sociopsychological communication literature, it has been posited that cultivation analysis can be applied to SNS use to understand how certain attitudes and beliefs may develop in users based on the degree of use.

Among the seven communication traditions reviewed by Craig (1999), a noteworthy communication scholar, cultivation theory should be situated within the sociopsychological tradition. Merkl-Davies and Brennan (2017) presented the sociopsychological tradition as focused on how the actions and behaviors of individuals may be explained psychologically. Apuke (2017) noted that within this tradition, one may be able to determine or explore relationships by careful and systematic observation. According to Maguire (2006), viewing communication through a sociopsychological lens involves considering how things are expressed, the interaction between sender and receiver, and the influences on actors in the communicative process. While cultivation theory has grown and been applied in several ways to various types of studies, it was not without criticism when first developed. Hughes (1980) and Hirsch (1980) were critical of the methodology used to conduct cultivation analysis, noting a lack of variance explained by the predictor variables as well as a lack of controls. However, this was quickly addressed by Gerbner and his colleagues with an adjusted conceptual model and additional variables and controls.

This study was conducted to answer research questions relating to how Optimism/Pessimism Instrument (OPI) mean scores differ between SNS users based on the degree of SNS use and demographical characteristics. This study was also conducted to

determine the relationship between SNS use and OPI mean scores individually while controlling for demographical characteristics to understand how the degree of SNS use impacts optimism/pessimism along with determining the moderating/mediating effects of the main SNS platform used, main SNS content viewed, and number of SNS connections. The research methodology used to help answer the questions posed in this study is a nonexperimental, correlational, quantitative method based on the methods employed by previous cultivation researchers. In the following sections, the background, problem statement, purpose, research questions, theoretical foundation, significance, nature of the study, and limitations of this research proposal are presented.

Background

The Origins and Development of Cultivation Theory

The development of cultivation theory began with George Gerbner (1970), a communication scholar and researcher who, in the late 1960s, developed the Cultural Indicators Project (CIP) with his colleagues to determine the main themes resulting from content analyses of prime-time television. The analyses found that violence and criminality was overrepresented in television programming, resulting in Gerbner hypothesizing that because television media was the primary avenue of media consumption in society at the time, a likely correlation would result between the amount of television consumed and the overrepresentation of violence or criminality in one's perspective. The results of Gerbner et al.'s (1978) study demonstrated a modest relationship between the degree of television consumption and mean world syndrome, which is the perspective that the world is more violent and criminal than it is in reality.

Doob and McDonald (1979) conducted a replicative study to test if Gerbner et al.'s (1978) theory was valid and further tested the theory by controlling for high- and low-crime

areas. Doob and McDonald (1979) found support for Gerbner et al.'s (1978) conclusions, but they determined that the theory was not supported when controlling for high- and low-crime areas. Low-crime areas showed statistically significant indications of mean world syndrome, but high crime areas did not, leading to the hypothesis that habitants of high crime areas were used to high levels of crime and were largely unaffected by it in television programming. Other scholars presented criticisms of Gerbner et al.'s work, such as Hughes (1980) and Hirsch (1980), who claimed that the data set used did not show the same results when replicating the analyses. Hughes and Hirsch noted that only one relationship of the five noted by Gerbner et al. (1978) was statistically significant and further offered the criticism that a number of available and explanatory predictor variables were not incorporated into the model.

Following on these critical responses, Gerbner et al. (1980) published a rebuttal noting their agreement that additional predictor variables and controls could have been used and expounded on their decision to represent the results in the manner chosen. Further, in response to Doob and McDonald's (1979) study, Gerbner et al. (1980) added further concepts to cultivation theory, such as mainstreaming and resonance. Gerbner (1998) defined mainstreaming as "a relative homogenization, an absorption of divergent views, and an apparent convergence of disparate outlooks on overarching patterns of the television world" (p. 183). This means that heavy viewership may override the differences in perspective that might result from other influences, including cultural, political, or social factors (Gerbner, 1998). Resonance relates to the idea that if television viewing reflects what one is experiencing in their environment, then television programming strengthens these perspectives the more one watches (Morgan & Shanahan, 2010).

Moving from Television Media to SNS

Gerbner et al. (1978) investigated television programming in order to better understand the macro-level effects of mass-mediated content on society. The resulting studies of this theory demonstrated a statistically significant relationship, although not without criticism. Attending to the criticisms, Gerbner and colleagues helped maintain the credibility of the theory, and other scholars have taken their work even further. What began as a macro-level theoretical concept has been applied to a wide variety of media platforms, such as the Internet, SNSs, newspapers, news broadcasts, and radio. Given the development and increased adoption of SNSs in society, especially among younger generations, how SNS use cultivates its users is an important topic in contemporary cultivation studies.

Although SNS cultivation is a new area of research, a number of studies have applied cultivation theory to SNS use. Two studies noted in a meta-analysis conducted by Potter (2022) showed how cultivation analysis has been applied to what Potter calls *digital experiences*. A study by Hermann et al. (2020) sought to investigate the cultivation effects of SNSs on SNS users' perceptions and attitudes toward ethnic diversity. Utilizing regression analysis to test the relationship between the degree of SNS use and perceptions regarding ethnic diversity, the study demonstrated a positive relationship between high degrees of use and positive attitudes toward ethnic minorities. Further, there was a positive relationship between the degree of Facebook use and perceptions of one's diversity of friends and colleagues. The other study noted by Potter (2022) was conducted by McNallie et al. (2020) and sought to determine the relationship between the degree of SNS use and perceived self-efficacy of first-year college students in the United States. Utilizing regression analyses, the results showed a direct positive effect for

Twitter and a direct negative effect for Facebook, indicating that different SNS platforms may have dissimilar effects on perceived self-efficacy.

Other studies that have applied cultivation theory to SNS use have investigated how the degree of SNS use affects English language adoption among young Nigerian students and also how the degree of SNS use relates to friendly world syndrome and fear of crime. Omoera et al. (2018) were interested in understanding the relationship between the degree of SNS use and the adoption of English slang found on these SNSs. With regression analysis, the results of the study demonstrated that Nigerian youth adopted and used more slang in the classroom as a result of SNS use, resulting in negative academic outcomes. Sestir (2020) conducted a study seeking to understand whether higher SNS use results in an increased sense of social support and ability to rely on others as a result of increased social connectivity. After conducting regression analysis, Sestir determined that there was a positive relationship between the degree of SNS use and increased friendly world syndrome, lending support to the idea that SNS use increases social connectivity. Also, Intravia et al. (2017) conducted a study to determine the relationship between SNS use and fear of crime. Using regression analyses, the researchers determined there is a positive relationship between SNS use and fear of crime in young adults.

The Psychological Impact of Increased SNS Use

In considering the literature on SNS use and cultivation, it is worth noting that the results of all the studies discussed above indicate a positive relationship between SNS use and cultivation effects (i.e., fear of crime, language adoption, friendly world syndrome, perceived self-efficacy, attitudes toward minorities, and perceptions of ethnic diversity). Studies specifically designed to determine the relationship between the degree of SNS use and psychological effects apart from cultivation theory have recently been conducted, and recent

literature in this direction has shown that increased SNS use can result in a number of negative psychological effects.

For example, Brunborg and Andreas (2019) were interested in understanding how the degree of SNS use may result in increased depression, behavioral issues, and episodic heavy drinking in Norwegian adolescents. The results demonstrated a modest yet statistically significant positive relationship for all of these variables.

Similarly, Keles et al. (2020) conducted a meta-analysis of studies that investigated how SNSs may influence depression, anxiety, and psychological distress in adolescents. Based on a systematic review of the literature in which time spent was a predictor variable, the relevant studies showed that time spent was positively related to depression, anxiety, and psychological distress. A study conducted by Primack et al. (2021) further supported this notion, finding that SNSs are positively correlated with the development of depression as well as increasing levels of depression the more SNSs were used.

While such findings have been consistently demonstrated in the literature, Hartanto et al. (2021) posited that instead of SNS use being a cause of depression, these findings can be explained by people prone to depression being more likely to use SNSs. However, the results of Primack et al.'s (2021) study showed that people who did not previously have depression developed it as a result of SNS use, thus indicating that SNSs do have the potential to produce and increase depressive symptoms with more usage. As evidence of this, a recent study by Gong et al. (2023) investigated the relationship between light, moderate, and heavy use of SNSs and found a positive relationship between three predictor variables and depression, showing that increased use was positively correlated with increased levels of depression.

The Applicability of Cultivation Theory and the OPI

It has been noted above that cultivation theory has been applied in a number of studies involving the degree of SNS use and cultivating effects, with the latter as the dependent variable. The results of these studies demonstrated that the degree of SNS use is positively related to positive perceptions of ethnic minorities and self-perceptions of diverse relationships. It was further presented that the degree of SNS use was positively related to both positive and negative perceptions of self-efficacy in first-year college students. The degree of SNS use was also positively related to increased fear of crime as well as increased friendly world syndrome. As such, based on the literature, it appears that SNSs exhibit mixed results in terms of positive and negative perceptions and psychological effects.

To further investigate this issue, the OPI developed by Dember et al. (1989) was employed in this study to understand how the degree of SNS use is related to levels of optimism and pessimism. According to Reilley et al. (2005), optimism and pessimism are personality variables that the literature has shown to have demonstrable effects on job performance, health, and social relationships. Dember et al. (1989) noted that optimism is reflective of positive emotional states necessary for the development of hopeful schemas that allow one to endure or overcome extreme emotional disturbances or psychosis. Further, Dember et al. found that the literature has shown pessimism is linked with depression and has also been found to also be prognostic of poor physical health. The OPI instrument was used in this study to determine whether there is a relationship between the degree of SNS use and OPI scores, as previous cultivation studies have shown both positive and negative cultivation effects, and the psychology literature has shown a statistically significant relationship between the degree of SNS use and increases in depression. Given the reasoning behind the OPI scale and the rigorous validation

process employed by previous researchers, it was determined that this scale was acceptable for use in this study.

Problem Statement

There is insufficient and inconclusive literature demonstrating how the degree of SNS use alters the attitudes and perceptions of users when applying cultivation theory. Recent studies have shown that SNS use may increase depression in users as usage goes up (Primack et al., 2021). However, another study has shown that increased SNS use may increase positive attitudes among users due to increased social interaction with close friends (Sestir, 2020), while Hartanto et al. (2021) reasoned that it may be that people with negative attitudes or depression may simply tend to use SNSs more. Studies have also indicated a positive relationship between SNS use and positive attitudes toward ethnic diversity (Hermann et al., 2020) as well as mixed findings on SNS use in relation to self-efficacy depending on the SNS platform used (McNallie et al., 2020). In spite of these noteworthy findings, the current literature examining the relationship between SNS use and attitude is relatively scant and at best inconclusive.

Based on the potential cultivation effects of SNS consumption on users, and as SNSs continue to compete for consumer attention, it will be important for policymakers, SNS developers, and SNS users to understand the impacts SNS use has on user attitudes and perceptions. While there is literature studying the effect of SNS use on the perceptions of users (e.g., on student self-efficacy, ethnicity, and diversity), it has not determined the relationship between the degree of SNS use and measures of optimism/pessimism. This study was conducted to contribute to the cultivation literature, filling a gap by determining the relationship between the degree of SNS use and the impact on user attitudes by using the OPI developed by Dember et al. (1989). This study was also conducted to examine the mediating and moderating effects of

platform type, content type, and number of connections on this relationship to further understand their potential contributions to cultivation effects. Investigating this has allowed for the development of insights into the cultivation effects of the degree of SNS use on user attitudes related to measures of optimism and pessimism as well as the mediating and moderating effects of platform, content, and connections.

Purpose Statement

The purpose of this study was to address a gap in the literature by applying cultivation theory to determine the relationship between the degree of SNS use and optimism/pessimism in users while also developing a greater understanding the effects of increased SNS use on psychological factors such as optimism and pessimism. A correlational, quantitative study was conducted using a cross-sectional, analytical survey instrument inclusive of questions related to demographics, degree of SNS use, main SNS platform used, main SNS content viewed, number of SNS connections, and optimism/pessimism (using the OPI). The predictor, or independent, variables in the study were the degree of SNS use as a measure of hours per day and total lifetime consumption measured in years as well as the number of times accessed per day. Based on critical works from the literature, this study included control variables of age, gender, educational level, race, marital status, household income, and employment. The moderating or mediating effects, or interactions, of SNS platform, content viewed, and number of connections were also determined. The response, or dependent, variables were the mean scores measured from the OPI scale. To test for a relationship, stepwise multiple linear regression was employed in this study. To ensure the fit of the model, the eight assumptions of multiple linear regression were tested and the *F*-Test or analysis of variance (ANOVA) were also conducted. Bootstrapping

and structural equation modeling (SEM) were used to test the mediating and moderating effects of platform, content, and number of connections.

Research Questions

Six main research questions (RQs) have guided this study:

RQ 1. How are OPI optimism and pessimism mean scores distributed based on the degree of SNS use and different demographic and SNS characteristics?

RQ 2. What is the relationship between the degree of SNS use and OPI scale optimism and pessimism mean scores when not controlling for and controlling for demographic characteristics?

RQ 3. When controlling for demographics, does the degree of SNS use have a greater effect on optimism or pessimism?

RQ 4. What are the moderating effects of the primary SNS platform used, primary SNS content viewed, and number of SNS connections on the relationship between the degree of SNS use and OPI optimism and pessimism scores?

RQ 5. What are the mediating effects of the primary SNS platform used, primary SNS content viewed, and the number of SNS connections on the relationship between the degree of SNS use and OPI optimism and pessimism scores?

RQ 6. What are the conditional effects of main SNS platform, type of SNS content viewed, and number of SNS connections in predicting optimism and pessimism based on degree of SNS use?

Hypotheses

Hypothesis 1A (RQ 2)

***H*01.** There is no statistically significant relationship between the degree of SNS use and OPI scale mean optimism scores when not controlling for demographic characteristics.

***H*a1.** There is a statistically significant relationship between the degree of SNS use and OPI scale mean optimism scores when not controlling for demographic characteristics.

Hypothesis 1B (RQ 2)

***H*01.** There is no statistically significant relationship between the degree of SNS use and OPI scale mean pessimism scores when not controlling for demographic characteristics.

***H*a1.** There is a statistically significant relationship between the degree of SNS use and OPI scale mean pessimism scores when not controlling for demographic characteristics.

Hypothesis 2A (RQ 2)

***H*01.** There is no statistically significant relationship between the degree of SNS use and OPI scale mean optimism scores when controlling for demographic characteristics.

***H*a1.** There is a statistically significant relationship between the degree of SNS use and OPI scale mean optimism scores when controlling for demographic characteristics.

Hypothesis 2B (RQ 2)

***H*01.** There is no statistically significant relationship between the degree of SNS use and OPI scale mean pessimism scores when controlling for demographic characteristics.

***H*a1.** There is a statistically significant relationship between the degree of SNS use and OPI scale mean pessimism scores when controlling for demographic characteristics.

Hypothesis 3A (RQ 4)

***H*01.** There is no statistically significant moderation by primary SNS platform used on the relationship between the degree of SNS use and optimism mean scores.

***H*a1.** There is a statistically significant moderation by primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 3B (RQ 4)

***H*01.** There is no statistically significant moderation by primary SNS content viewed on the relationship between the degree of SNS use and optimism mean scores.

***H*a1.** There is a statistically significant moderation by primary SNS content viewed on the relationship between the degree of SNS use and optimism mean scores.

Hypothesis 3C (RQ 4)

***H*01.** There is no statistically significant moderation by the number of SNS connections on the relationship between the degree of SNS use and optimism mean scores.

***H*a1.** There is a statistically significant moderation by the number of SNS connections on the relationship between the degree of SNS use and optimism mean scores.

Hypothesis 4A (RQ 4)

***H*01.** There is no statistically significant moderation by primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1.** There is a statistically significant moderation by primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 4B (RQ 4)

***H*01.** There is no statistically significant moderation by primary SNS content viewed on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1.** There is a statistically significant moderation by primary SNS content viewed on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 4C (RQ 4)

***H*01.** There is no statistically significant moderation by the number of SNS connections on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1.** There is a statistically significant moderation by the number of SNS connections on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 5A (RQ 5)

***H*01.** There is no statistically significant mediation by primary SNS platform used on the relationship between the degree of SNS use and optimism mean scores.

***H*a1.** There is a statistically significant mediation by primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 5B (RQ 5)

***H*01.** There is no statistically significant mediation by primary SNS content viewed on the relationship between the degree of SNS use and optimism mean scores.

***H*a1.** There is a statistically significant mediation by primary SNS content viewed on the relationship between the degree of SNS use and optimism mean scores.

Hypothesis 5C (RQ 5)

***H*01.** There is no statistically significant mediation by the number of SNS connections on the relationship between the degree of SNS use and optimism mean scores.

***H*a1.** There is a statistically significant mediation by the number of SNS connections on the relationship between the degree of SNS use and optimism mean scores.

Hypothesis 6A (RQ 5)

***H*01.** There is no statistically significant mediation by primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1.** There is a statistically significant mediation by primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 6B (RQ 5)

***H*01.** There is no statistically significant mediation by primary SNS content viewed on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1.** There is a statistically significant mediation by primary SNS content viewed on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 6C (RQ 5)

***H*01.** There is no statistically significant mediation by the number of SNS connections on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1.** There is a statistically significant mediation by the number of SNS connections on the relationship between the degree of SNS use and pessimism mean scores.

Theoretical Foundation

The theoretical communication framework employed in this study is cultivation theory, which was developed by George Gerbner in the late 1960s (Gerbner, 1970). The CIP discovered through a content analysis of prime-time television media that television programming was prone to showing violence and criminality, overrepresenting these characteristics in television compared to reality (Gerbner et al., 1978). As such, Gerbner postulated that heavy viewers of television would likely perceive reality to be more violent or criminal than what is statistically representative in data on violence and crime. Subsequent studies demonstrated that there was statistically significant support for the idea that the more someone consumes television media,

the more likely they are to exhibit mean world syndrome, which is when one sees the world as more violent than it really is. Further studies adopting this foundational theoretical understanding have explored other mediums, such as radio, newspaper, Internet, and SNSs. Throughout the development of cultivation theory since the 1970s, there has been consistent support demonstrating the merit of the theory and its resulting analyses, which will be further detailed in Chapter 2 of this study.

Cultivation theory relates to the approach of this study on the premise that SNSs are becoming a central medium for the consumption of content. While cultivation theory began with television media as the central medium of study, recent literature has begun to focus on SNSs as the central medium, with results consistently showing the cultivation effects of SNS use. The literature has also demonstrated that SNSs have increasingly negative effects on psychological states with more usage. As such, it was proposed in this study that cultivation theory is an appropriate theoretical framework for conducting a study to determine the relationship between the degree of SNS use and OPI scores, which indicate how the degree of SNS use correlates with increased optimism and pessimism. While this study addresses a gap in the literature by applying cultivation theory has been to determine the effect on the optimism and pessimism of the user, it also offers evidence for whether or not the degree of SNS use can perpetuate depression. It was noted above that the literature has linked pessimism with depression as well as poor physical health. Finally, the methodology used within cultivation theory, wherein the degree of media consumption from some medium is tested for a statistically significant relationship with some perception, attitude, behavior, or psychological state, is appropriate given the purpose of this study in testing for a similar relationship with similarly defined variables.

Nature of the Study

Based on the application of cultivation theory as a theoretical foundation for conducting this study, the sociopsychological communication tradition is appropriate for use in this study. The research design selected for this study was a nonexperimental, correlational, quantitative design based on the purpose of the study in determining the relationship between the degree of SNS use and mean scores on the OPI. The methodology for the study is a cross-sectional analytical survey that collects demographical information, SNS usage data, and optimism/pessimism measures using the OPI scale developed by Dember et al. (1998). This survey was conducted via CloudResearch's Connect platform with a linked Qualtrics survey. This survey method allows academic researchers to post surveys that workers (i.e., participants), can participate in if they agree on the compensation for the work (i.e., survey completion) and meet certain criteria or requirements set by the researchers.

Rationale for the Selected Communication Tradition

The sociopsychological communication tradition was selected based on the communication theory employed, cultivation theory, being situated within this strand of scholarship. While presenting this tradition, Craig (1999) noted that sociopsychological communication "is mediated by psychological predispositions (attitudes, emotional, states, personality traits, unconscious conflicts, social cognitions, etc.) as modified by emergent effects of social interactions" (p. 143), which he posited included the effects of interpersonal influence, institutions, and media technologies.

Considering that cultivation theory is premised on understanding the mass-mediated effects of television media consumption on society's perception of violence and crime based on viewership, it stands to reason that cultivation theory fits squarely within the sociopsychological

tradition. Given that social psychology has always been interested in the ways people affect or are affected by others, the sociopsychological tradition pertains to how communication can be used to affect others or how others are affected by it (Apuke, 2017). Cultivation theory, as well as the purpose of this study, aligns with this tradition, as this study was conducted to understand how SNS use affects users.

Rationale for the Research Method and Design

The rationale for this study's nonexperimental, correlational, quantitative design was based on its purpose of determining the relationship between the degree of SNS use and measures of optimism/pessimism from the OPI scale. The study is nonexperimental, as none of the variables were manipulated, and correlational, as I sought to determine the relationship between a predictor and response variable. A quantitative design was selected based on the need to determine a relationship, and as such, a quantitative model was tested, and a predictive model resulted from regression analyses. A quantitative design was also chosen based on the design and methods set forth by the founder of cultivation theory as well as the consistent use of quantitative methods throughout the development of this area of research.

Description of Key Variables and Summary of the Selected Method

The key variables for this study include predictor variables related to degree of SNS use measured by hours per day and overall lifetime use (years) as well as number of times accessed per day. The control variables, selected based on critical studies in the literature to aid in potentially explaining variance, were educational level, race, gender, age, marital status, employment status, and household income. The response variables selected were the mean OPI scale scores, which measured the level of optimism/pessimism in the SNS user. The rationale for the selection of these variables is based on prominent works on cultivation theory. These

variables are aligned with those used in the literature when testing models similar to the one in this study to determine whether there are statistically significant relationships. The data was collected by developing a cross-sectional, analytical survey instrument that was designed through Qualtrics, a third-party survey platform, and implemented through CloudResearch's Connect platform.

The main function of Connect in academic studies is finding suitable study participants. The survey was developed in Qualtrics and linked to Connect, which is ideal for academic research. After the data was collected and adequately cleaned, the assumptions of multiple linear regression were tested to ensure model fit. Once the assumptions were tested, stepwise linear regression was conducted to determine the relationship between degree of SNS use and OPI scores. I used STATPLUS to conduct these analyses, which is a data analytics and statistics plugin in Microsoft Excel. ANOVA tests were used to test for the statistical significance of the controls before building the model with controls, and they were tested through StatPlus. Moderation effects of type of platform used, content viewed, and number of connects were tested using SPSS v29 via PROCESS v4.3 Hayes Macro bootstrapping technology, and mediation was tested using SmartPLS4's PLS-SEM bootstrapping technology. The results of the analyses are presented in Chapter 4 and discussed in Chapter 5.

Definitions

Cultivation theory. A theory developed by George Gerbner and his colleagues to investigate the effects of mass-mediated television content on the viewing public based on degree of viewership (Gerbner et al. 1978).

Cultivation analysis. Testing the cultivation effects of a medium by use of survey methodology wherein degree of medium consumption is measured and tested against a cultural

indicator or response variable related to perceptions, psychological state, behavior, or attitude (Gerbner, 1998).

Cultural Indicators Project (CIP). The CIP was developed by George Gerbner and his colleagues in an effort to conduct a content analysis of prime-time television in order to understand what the central themes are, which ultimately led to the development of cultivation theory (Gerbner et al., 1978).

Mainstreaming. Mainstreaming within cultivation theory relates to the convergence of ideas in society, regardless of personal ideals or characteristics, as a result heavy media consumption (Gerbner et al., 1986).

Mean world syndrome. Mean world syndrome is a condition by which heavy television viewership results in a skewed perception of reality as a result of the overrepresentation of violence and crime on television, resulting in one perceiving reality as more violent than is actually the case (Gerbner et al., 1980).

Optimism/Pessimism Instrument (OPI). A rigorously developed instrument used to measure the level of optimism or pessimism present within a person (Dember et al., 1989).

Resonance. Resonance within cultivation theory relates to the how heavy television viewership reinforces perceptions of reality if what is portrayed on television matches the viewer's reality.

Social networking site (SNS). SNSs, as defined by Omoera et al. (2018), are used for "building online local, regional, and global communities to communicate their shared interests and activities, disseminate information, learn, and interact through a variety of web-based tools" (p. 62).

Assumptions

A number of studies from the cultivation literature were presented to demonstrate the impact that the degree of SNS use can have on the user as it relates to perceptions of diversity, attitudes toward ethnic minorities, self-efficacy in academics, fear of crime, and friendly world syndrome. A number of academic studies from social psychology literature were also presented, demonstrating a statistically significant relationship between the degree of SNS use and depression, anxiety, and psychological distress. Thus, it was proposed that the more one uses SNS, the more likely one is to develop or increase depressive symptoms, anxiety, or psychological distress. The cultivation and social psychology literature align in this direction, with the exception of a study by Sestir (2020) showing positive effects as a result of increased SNS use due to increased social connections. Based on the previous literature, I posited that increased SNS use will result in increased levels of pessimism as measure on the OPI scale. Further, based on the critical seminal works of Hughes (1980) and Hirsch (1980), it was postulated that a statistically significant variance will be explained by the control and predictor variables related to the degree of SNS use.

Scope and Delimitations

CloudResearch's Connect platform was used to obtain participants for this study. The purposive sample was generalizable only to the selected criteria for participation, which involved being 18+ years of age, a resident of the United States, and an active social media user for at least 1 year. These were set as requirements to participate in the study on the Connect platform to ensure the quality of the results and that the participants adequately understood the nature of the study and the questions within the survey. There were no set conditions on race, educational level, gender, or income to keep results as generalizable as possible. While the sample is still a

purposive sample, utilizing a platform such as Connect allowed for the acquisition of a sufficient sample size for accurate statistical analysis.

Limitations

This study has a number of limitations. The study proposed is a correlational study that helps answer the research questions presented by determining the relationship between degree of SNS use and OPI mean scores. However, it is important to note that while correlations may be present, this is in not necessarily indicative of causation. Further, this study included a number of predictor and control variables necessary for answering the research questions. However, it should be noted that there may be other predictor or control variables that could explain the variance in the models. Another limitation relates to the generalizability of the sample population. Connect was used as a means for collecting data from participants, and while it allows for a large pool of data to be collected, it still draws from a purposive sample and is not generalizable to the population of the United States or world. However, the data obtained provided valuable insights for answering the research questions. While I attempted to rigorously exclude bias as much as possible, it is still possible for various forms of research bias to have impacted the results of the study.

Significance of the Study

This study is significant in that it (a) advances cultivation theory as applied to the use of SNSs, which is becoming a primary avenue for information and engagement; (b) it advances the understanding needed by policymakers, platform developers, and users to determine what regulations should be implemented to protect users and improve platform features as well as how SNSs can be used to positively or negatively affect the attitudes of consumers; and finally, (c) it fills a gap in the literature by determining how the degree of SNS use may impact the attitudes of

users. This study advances cultivation theory by showing how the degree of SNS use impacts the attitudes of users and to what extent as well as how type of platform, content, and number of connections moderates and/or mediates this impact. By collecting measures of optimism/pessimism for users and data on the degree of SNS use, the relationship between the degree of SNS use and measures of optimism/pessimism was determined. Based on the results, I was able to make significant findings on the effects of SNS use on the user and inform the direction of future studies that may look at specific SNS platforms, SNS content, or number of SNS connections.

This study advances practice by informing policymakers, platform developers, and researchers, who are likely SNS users themselves, of the potential effects of the degree of SNS use on the mindsets and attitudes of users. With this information, relevant parties can make better-informed decisions when developing regulations for SNS platforms and SNS developers can improve platform functionality for its users. By understanding how SNSs affect attitudes, SNS developers can seek to develop ways to avoid detrimental impacts on the minds of users, especially younger and more impressionable ones. Finally, and the primary problem addressed is that a gap in the literature was filled, if only partially, by determining whether the degree of SNS use impacted the attitudes of users, and how platform, content, and number of connections moderates/mediates this impact. By measuring optimism and pessimism in users and measuring the degree of SNS use, it was determined that a relationship exists and that this relationship is mediated by content and connections. Based on the results, support was found that helps provide more solid direction on how SNS use impacts users, which may help inform and direct future studies.

Summary

This chapter has provided background information on the origins of cultivation theory, the application of cultivation theory to SNS use, and the reasons for adopting this theory in this study. The research problem relating to the absence of literature applying degree of SNS use to measures of optimism and pessimism in users as well as the inconsistent findings in previous studies to the nature of impact that degree of SNS use has on the user was also explained. Given this, the purpose of this study is to address the gap in the literature and also support previous literature in determining the impact degree of SNS use has on the user. The theoretical foundations as well as the nature of the study were also presented, which included the rationale for the communication tradition selected and the research design and methodology.

The key variables were explained along with a summary of the method of data collection and analyses chosen. The use of a quantitative research design based on the previous literature and nature of the study were presented as well as the purpose for the analytical model chosen. It was noted that previous scholars applying cultivation analysis used a survey methodology for collecting data and regression models for testing a relationship between predictor, control, and response variables. Based on the literature, it was postulated that the findings of the study would demonstrate a relationship between degree of SNS use and OPI mean scores, with heavy SNS resulting in increased levels of pessimism in users. The scope, delimitations, limitations, and significance of the study were also presented. The next chapter will discuss the literature search strategy used and theoretical foundations and conduct an extensive review of the literature.

Chapter 2: Literature Review

Overview

In Chapter 1, a brief overview of the study topic and purpose was presented. The purpose of this chapter is to expound upon the concepts discussed in the introduction and background sections of that chapter. The literature search strategy will be presented first. The subsequent main sections in this chapter include a discussion of the communication tradition relevant to this study, a thorough discussion of the theory applied in this study, and a robust review of the literature. The theoretical foundation section will touch upon the origins and development of cultivation theory, the seminal and critical works, as well as a discussion on the theory's relationship to this study. The literature review will expound upon the literature related to cultivation studies that employ SNS use as a predictor for indicators such as attitude, perception, behavior, knowledge, or emotion. Finally, I will detail the literature that discusses the impact of SNS use on psychological constructs and explain the constructs used in this study and the OPI scale.

Literature Search Strategy

An extensive review of the literature related to the research topic was conducted and body of works was found related to cultivation theory, the sociopsychological communication tradition, SNS use and cultivation analysis, SNS use and psychological traits, optimism, pessimism, and the OPI scale. The literature obtained was found through remote searches of peer-reviewed research articles and books through various electronic databases. The Liberty University Online Library search engine was used to search multiple databases concurrently, including EBSCO, JSTOR, SAGE Premier, ERIC, and Google Scholar. The resources gathered were narrowed by using specific Boolean searches via keywords and phrases to obtain the most

relevant literature, such as “cultivation theory and SNS,” “SNS and depression,” “cultivation theory,” “SNS use and cultivation analysis,” and “what is optimism/pessimism.”

Relationship to the Communication Tradition

Sociopsychological Tradition

When describing the sociopsychological communication tradition, Maguire (2006) noted that it focuses on communication that is theorized in relation to influence, expression, and interaction. Apuke (2017) discussed that the sociopsychological tradition pertains to “cause and effect relationships” that can be observed through “careful and systematic observation” (p. 21). And Littlejohn et al. (2021) posited that this tradition falls within the field of social psychology, and theories contained within this tradition pertain to individual effects, psychological variables, personalities, and traits as well as cognition or perception. Littlejohn et al. further noted that the human mind is a focus of this tradition, wherein it is seen as a locus for understanding and processing information. According to Littlejohn et al., the sociopsychological tradition can be segmented into three areas of focus: (a) cognitive, (b) behavioral, and (c) biological. When describing the sociopsychological tradition, Craig (1999) postulated that theories that fall under it are typically interested in explaining “the causes and effects of social behavior and practices that attempt to exert control over those behavioral causes and effects” (p. 143).

Situating Cultivation Theory

Considering the seven communication traditions presented by Craig (1999), cultivation theory would be situated within the sociopsychological communication tradition. When discussing the sociopsychological tradition, Craig noted that it focuses on communication “as a process of expression, interaction, and influence” wherein a process of exchange involving various psychosocial elements occurs and based a convergence of meaning transpires between

actors (p. 143). Craig further proposed that another way of viewing communication is from the lens of actors influencing each other through a process of interaction, which can happen in-person or through the use of technology and may happen in many different formats, such as "one-to-one, one-to-many, many-to-many" (p. 143). Considering that cultivation studies examine the impact of media on psychological states and how certain content influences perceptions, cultivation theory is situated squarely within the sociopsychological tradition.

The CIP adopted a macro-level view of how mass-mediated messages disseminated through television affect the perceptions and attitudes of users based on viewership. This was theorized on the premise that television was the main outlet for the transfer of information from broadcaster to audience and the notion that television content is often violent, with criminality and violence being overrepresented. In this instance information is communicated to the user in a one-to-many format, from broadcaster to television viewers. SNS, however, has more of a many-to-many format. Also, the primary focus of the sociopsychological tradition is on the process of expression, interaction, and influence, and these are also relevant in cultivation theory as it is being applied here, focusing on the degree SNS use and its influence on user attitudes and perceptions (i.e., optimism/pessimism).

The Sociopsychological Tradition and Cultivation Theory

Cultivation theory functions here as a foundation and framework for testing the relationship between the degree of SNS use and mean OPI scores. This study was conducted to understand how the degree of use of SNS impacts attitudes, specifically optimism and pessimism. Cultivation theory was first developed after the discoveries of Gerbner (1970) with the CIP. At that time, television was the main form of media consumption. While television viewership was not used as a predictor variable, a number of studies have recently incorporated

aspects of cultivation theory to test the degree of SNS use with a response variable related to attitudes, perceptions, behaviors, or cognitions. As such, the literature related to these studies has been presented in support of the decision to use cultivation theory as well as the research method and design chosen for this study, which is situated within the sociopsychological communication tradition.

Littlejohn et al. (2021) describes the sociopsychological communication tradition as originating in the field of psychology and premised on the notion that the theories in this tradition focus on psychological variables and traits, personalities, individual effects, perception, and cognition. Overall, this tradition is focused on the human mind. Given the nature of the sociopsychological tradition, cultivation theory fits within it, and this study solidly fits within the theory and communication tradition selected based on the focus on psychological variables. Considering that optimism and pessimism can be examined from the perspective of both perceptions and personalities and traits and can also be considered psychological variables, this study can be seen as fitting squarely within the sociopsychological tradition.

Theoretical Foundation

Origins and Seminal Works

Within the communication literature, the study that set the stage for what would become cultivation theory is Gerbner's (1970) discussion of the CIP findings, where he posited that based on his finding on the overrepresentation of violence on television, there was "the need for more comprehensive, cumulative, and comparative information on mass-cultural trends and configurations" (p. 69). Another seminal work is the first in-depth critical analysis of Gerbner by Hughes (1980), who noted that while using the same data from Gerbner's initial cultivation analysis, he was not able to replicate the findings. Hughes also argued that the analysis being

bivariate between just television watching frequency and cultural indicators (survey responses gauging perceptions of reality) left out other important variables that may also contribute to cultivation.

In their response, Gerbner et al. (1980) stood by their methods but also noted the importance of including other potential variables in the analysis. This led to controlling for several demographic variables in their future research and the development of two additional concepts—mainstreaming and resonance (Gerbner et al., 1980; Gerbner et al., 1986). In defining mainstreaming, Gerbner et al. (1986) noted that it "means that television viewing may absorb or override differences in perspectives and behavior that stem from other social, cultural, and demographic influences" (p. 31). The concept of resonance comes from the notion that when someone watches television and the messages found there seem to match or come close to what they experience in real life, there is a reinforcing effect on those experiences and resultant beliefs (Gerbner et al., 1986). Gerbner et al. found that when people lived in high-crime urban areas, their perceptions of insecurity were more pronounced, which the researchers posited was due to a "double dose of messages that resonate and amplify cultivation" (p. 30).

Development of the Theory

Gerbner's early work focused on how mass-mediated messages, which were then controlled by institutions, shaped collective consciousness based on what messages were being communicated and how those messages were delivered and received (Gerbner, 1970). When the CIP was developed in the late 1960s by Gerbner and his colleagues, the research team began analyzing the content of prime-time television messages to understand what the primary messages being communicated were, and how those messages were conveyed (Morgan & Shanahan, 2010). A analysis of television programs revealed that much of the content contained

violence, which in most cases, was overrepresentative of the level of crime and violence in society. Thus, Gerbner hypothesized that those who watch a high level of television would have a higher propensity to frame reality as more violent than is actually the case (Gerbner, 1970). Based on the preliminary research by Gerbner, there was significant support for a positive linear correlation between the frequency of television watching and perceptions of violence in reality, or how accurately one perceives levels of crime and violence in reality (Gerbner, 1970). The term *mean world syndrome* was used to describe a condition wherein an individual was said to see the world as more violent than it really is (Gerbner, 1998).

Since the inception of cultivation theory, a number of other researchers, including those who are a part of the CIP, have published studies that expand cultivation research. At the beginning of the early literature on cultivation theory, Gerbner (1970) focused on a more macro-level process of influencing social reality but later on also began to research the process of influence at the individual level (Gerbner et al., 1986). Over time, researchers have focused on the effects on psychological phenomena like attitudes (Diefenbach & West, 2007), emotions (Morgan & Shanahan, 2010), and behaviors and knowledge (Potter, 2022). As cultivation theory has evolved, researchers have also explored other influential factors in specific types of television content across different types of media devices and outlets (such as computers, tablets, smartphones, magazines, and blogs) and, more recently, digital experiences such as video games, YouTube, and other SNSs, like Facebook and Twitter (Hermann et al., 2020; McNallie et al., 2020; Potter, 2022). So, what began as a project to see how media institutions influence societal beliefs about social reality has branched off into various different areas based on further work from researchers and changes in media consumption. This expansion of the theory is necessary

as consumers continue to exercise control on the media they consume and send to others on platforms like SNSs.

Previous Uses of Cultivation Analysis With SNSs

While the early cultivation theory literature primarily focused on television programming and the various different ways it could be studied, the most current cultivation literature has focused on the effects of SNSs. This is a logical next step, as consumers are utilizing SNSs in place of television content (Hermann et al., 2020). It is also important for communication scholars to continue expanding research on this topic, as psychology research studies have shown that SNS use can perpetuate negative psychological states in users (Intravia et al., 2017; Intravia et al., 2018; Primack et al., 2021; Stein et al., 2021). Furthermore, recent studies have shown that SNS use can positively affect perceptions of cultural diversity and inclusion (Hermann et al., 2020) and self-efficacy in academics (McNallie et al., 2020) and improve perceptions about society (Sestir, 2020). Thus, there are somewhat inconsistent or uneven findings on how SNSs impact users, which is not unusual or unexpected, as the experience of content on SNSs is different for every user and dependent on a number of factors, such as content followed, friends or connections, and also how algorithms present different types of content to each user. Thus, future cultivation researchers, especially those focusing on SNSs, will need to conceptualize a way to better outline and define the impact of SNSs as a digital experience within the framework of cultivation analysis.

Criticisms and Weaknesses of the Theory

Doob and McDonald (1979) discussed that Gerbner et al. (1978) had developed a theory that those who watch more television are more likely to be afraid of their environment based on the overrepresentation of violence on television. To determine whether or not the findings of this

study were supported, Doob and McDonald (1979) conducted a similar study in which they employed a survey similar to Gerbner et al.'s (1978). However, Doob and McDonald decided to control for high- and low-crime areas to see if there was still a statistically significant relationship between television viewership and fear of crime. The results of the study demonstrated support for Gerbner et al.'s (1978) theory when pooling all areas together, but when controlling for high or low-crime areas, the results were not statistically significant (Doob & McDonald, 1979). The results showed statistical significance in high-crime areas but not low-crime areas. Thus, Doob and McDonald hypothesized that television may depict crime as only prevalent in high-crime neighborhoods, and as such, people in low-crime neighborhoods ignored this or processed it differently while watching. While not explicitly stated in this study, this is when the concept of resonance begins to appear in the cultivation literature.

In what Potter (2022) has considered one of the primary critical works next to Hughes (1980), Hirsch (1980) conducted a critical analysis of cultivation theory using the same data set analyzed by Gerbner et al. (1978) when determining whether or not attitudes about the world could be predicated on the level of television viewership. Hirsch (1980) presented a number of different criticisms of Gerbner et al.'s (1978) work. Hirsch (1980) discussed that while Gerbner and his colleagues were trying to separate the concepts of causality and cultivation, the argument they presented and the way they presented it were similar to causal analysis. Further, Hirsch criticized the use of the control of hours viewed per day and noted that additional controls were needed, such as age, gender, and education level. When conducting regression analyses and combining and controlling for the different variables, the betas were relatively low, at .08–.16, exceeding 10% in only three instances (Hirsch, 1980). In this situation, education level was the strongest predictor for the dependent variables relating to different attitudes.

Given this, Hirsch (1980) argued that television as a separate and independent variable for predicting attitudes of a scary and mean world was spurious. Hirsch also criticized the ranges of television viewing hours employed, noting that they didn't account for extremes like nonviewers and heavy viewers, which were present in the available data. When accounting for this, the results showed that nonviewers had the highest linear relationship with a mean and scary outlook, denoting an exception to the conceptual argument of cultivation theory, as nonviewers would not be cultivated by television viewing. Hence, this supported their argument that other variables must be considered in cultivation studies. Hirsch (1980) also presented that in the work of Gerbner et al. (1978), it appears that a number of relationships were not presented, and some were intentionally left out. With considerations of these criticisms, however, Hirsch noted at the end of his work that Gerbner et al.'s attempts are still "rightly regarded as important and systemic contributions to communication research" (p. 450).

While Hughes (1980) had similar criticisms of cultivation theory to those of Hirsch (1980) relating to controls, Hughes (1980) also presented the argument that the questions and answers used in the survey to gauge specific perceptions about reality may, in and of themselves, have been spurious. For example, Hughes (1980) argued that the attitudes measured may in fact have been representative of reality, and as such, should not have been measured as mean and scary at all since they *might* actually represent reality. Hughes argued that the violence and crime depicted on television along with other aspects measured might be aligned with the perceptions of heavy television viewers, and as such, there may be no cultivation effect occurring at all. Hughes further posited that the small effects were found in the original research might be explained by the existence of people who have a mean and scary perception of reality watching

more television because they are afraid to go outside as opposed to heavy viewing having a cultivating effect on perceptions.

In a rebuttal to Hughes (1980), Gerbner et al. (1980) claimed that while Hughes presented a "provocative and persuasive contribution to understanding the implication of living with television," they had "a number of hesitations, objections, and disagreements" preventing them from accepting his conclusions (Gerbner et al., 1980, p. 408). Gerbner et al. first argued that while Hughes presented an argument for no relationship existing, in reality there were statistically significant relationships, though the variance explained by the predictor variables were small. Gerbner et al. also posited that while the main effects can be explained by variables other than television viewing, the main effects may be less important than specifications (i.e., nonspurious associations within specific subgroups). As a result of Hughes' work, however, Gerbner et al. developed a new conceptual element to their theory with mainstreaming. Ultimately, Gerbner et al. noted that Hughes' work presented some strong arguments; however, it does not discredit the theory altogether.

In one of Potter's (1994) first critical works on cultivation theory, he argued that the way exposure had been measured in cultivation studies was not consistent across different studies and that the main measurement used introduces a weakness in the statistical accuracy of the results. For example, the main method for measuring television exposure is typically a Likert scale, often by hours per day of television watched. Potter (1994) argued that if researchers simply asked the number of hours per day watched, it would allow for greater accuracy. In his two later papers (Potter, 2014; Potter, 2022), Potter presented a critical analysis of three conceptions of the term cultivation: (a) a macrosystem explanation of mass media processes and effects, (b) a pattern of operational practices that seek to explain the relationship between watching television and a

range of cultivation indicators, and (c) conceptions derived from a number of breakaway studies that go beyond Gerbner's conception of cultivation.

Potter argued that cultivation analysis could no longer offer a macrosystem explanation, as technology had advanced and consumers used a number of different media sources as opposed to getting all media from one source. Also, the methods by which studies were conducted, while largely similar to the original methods, used a number of different predictor and response variables. Finally, Potter critiqued the types of studies applying cultivation analysis, highlighting that cultivation theory had been extended across a number of different areas that it was not originally intended for. While maintaining a similarly critical stance to his 2014 study, Potter's 2022 study also presented an in-depth meta-analysis of current cultivation literature.

In consideration of these critiques, when conducting a study applying cultivation theory, it is important to ensure that when developing a predictive model that appropriate explanatory variables and controls are used to determine the predictive power of the explanatory variables themselves. One of the major criticisms of the theory has been the lack of predictor variables used when fitting the model based on survey data and also the number of controls used to determine the separate and independent predictive power of television. Another aspect to consider is whether cultivation theory is appropriate to explain the presence of certain attitudes among SNS users based on the number of hours of SNS used. While the majority of criticisms related to the predictive model rather than the medium, a small but notable argument from Potter (2022) concerns the use of cultivation theory for various media sources. Considering the research topic of this study, I will show in the following sections that based on previous cultivation literature and the methods used to predict cultivation effects, cultivation theory is appropriate here.

Rationale for Using Cultivation Analysis in This Study

This theory relates to the study approach presented based on the premise that SNSs are becoming a central medium for the consumption of content. While cultivation theory began with television as the central medium of study, recent literature has begun to focus on SNSs as the central medium, with results consistently showing the cultivation effects of SNS usage. The literature has also demonstrated that SNS use increasingly negatively affects psychological states the more it is used. It has been proposed here that cultivation theory is an appropriate theoretical framework for conducting a study to determine the relationship between the degree of SNS use and OPI scores, which indicates whether the degree of SNS use really correlates with increased optimism or pessimism. This study addresses a gap in the literature by examining optimism and pessimism, it also provides evidence for whether or not the degree of SNS use can perpetuate depression. It was presented that the literature has linked pessimism with depression as well as poor physical health. Finally, the methodology used in cultivation theory, wherein the degree of media consumption of some medium is tested for a statistically significant relationship with some perception, attitude, behavior, or psychological state, is appropriate here given a similar relationship with similarly defined variables in this study.

Review of the Literature

The theoretical foundations of cultivation theory were expounded on by presenting the seminal works on the origins and development of the theory as well as the critical works and recent publications in which SNSs were emergent media channels under investigation. A robust presentation of the literature related to SNS use and cultivation was given, which supported the purpose of this study as well as explained the psychological impact of SNSs, the constructs of optimism and pessimism, and a review of the OPI's development, validation, and use.

Cultivation Analysis and SNS Use

In the following sections, the current literature on the topic of the use of SNSs and the impact this use has had on cultivating different attitudes, beliefs, perceptions, behaviors, or emotions in users will be discussed.

Self-Efficacy

McNallie et al. (2020) conducted a study to understand how SNS intensity, a term coined by the researchers, impacted first-year college students' self-efficacy in Flanders and in the United States. Premising the study on the cultivation effects developed by Gerbner (1970), McNallie et al. postulated that SNS intensity may also have a direct or indirect effect on college students' perceptions of self-efficacy based on repeated exposure to consistent media messages on SNSs. SNS intensity represented the extent to which people spend time on SNSs, how important are SNSs to the functioning of their lives, and how many connections users have on the respective SNS platforms. The study was conducted on two different samples, one involving 513 undergraduate students from Flanders and 431 undergraduate students from a Midwestern research university in the United States. Predictor variables were SNS intensity and perceptions of others' academic ease, while the dependent variables were academic self-efficacy; control variables included distance from parents and the number of visits home (McNallie et al., 2020).

The study found significant direct relationships for U.S. students, namely, that Facebook intensity was negatively associated with academic self-efficacy related to the environment but not performance, and Twitter intensity was positively associated with academic self-efficacy related to performance but not the environment (McNallie et al., 2020). In the Flemish population, Facebook intensity was negatively associated with academic self-efficacy in both performance and environment, while Twitter showed the opposite in both dimensions of self-

efficacy. These results indicated that while Facebook may decrease student self-efficacy, Twitter has the potential to increase it, showing that the two SNS platforms can have different intensity effects (McNallie et al., 2020). As far as indirect effects, the researchers found that when students had lower perceptions of others' academic ease, they had higher self-efficacy, while perceptions of higher academic ease in others resulted in lower self-efficacy. This was significant across both samples and showed the mediating effects of perceptions of others' academic ease (McNallie et al., 2020).

Perceptions of Diversity and Attitudes Toward Minorities

Hermann et al. (2020) were interested in applying cultivation theory to determine the relationship between the degree of Facebook use (measured by minutes used per day) and two response variables: perceived prevalence of ethnic diversity and attitudes toward ethnic minorities. The control variables used were in line with previous studies, with the inclusion of demographic variables such as age, income, sex, and education level. Hermann et al. performed a stepwise multiple linear regression to test for the first-order cultivation relations that they had hypothesized (H1 and H2). The researchers also performed regression-based analysis to understand second-order cultivation relationships with mediator variables as predicted in their third hypothesis. The sample used for the study was 476 undergraduate marketing students at a German university, and participants engaged in a cross-sectional, analytical survey related to daily Facebook use and perceptions of ethnic diversity in society along with attitudes toward people of other ethnicities (Hermann et al., 2020). Respondents were also tasked with gauging the percentage of friends and colleagues they had of different ethnicities.

The results of the survey showed that Facebook was positively related to the predicted percentage of ethnic minorities in Germany, while it was only slightly positively related to the

perceived percentage of ethnic minority friends and colleagues (Hermann et al., 2020). Based on these findings, the researchers posited that the evidence supported H1. Hermann et al. also postulated the positive relationship between Facebook use and attitudes toward ethnic minorities supported H2. Finally, the researchers offered that the evidence also moderately supported H3 with the finding that Facebook use positively affected the perceived percentage of ethnic minority friends and colleagues, which was also found to be positively related to attitudes toward ethnic minorities. The findings supported the idea that the degree of SNS use perpetuates cultivation effects in the perceptions and attitudes of users based on the degree of use, which in this case, was limited to Facebook.

Language Influence

Omoera et al. (2018) conducted a study examining the cultivation effect of SNS use based on the writing abilities of undergraduate students in Ekpoma, Nigeria. Omoera et al. noted that English is used in Nigeria for mass-mediated messages and therefore posited that English instruction is an important part of Nigerian education. Omoera et al. was interested in exploring how the use of SNSs could impact the English writing abilities of youths in Nigeria as well as understanding how these youths perceived SNS impacts on their own writing ability. Omoera et al. used a cross-sectional survey, which was distributed to 135 undergraduate students at a university in Nigeria. In total, 120 surveys were used and validated by research experts on staff in the university departments of theatre and media arts. The correlation coefficient of the instrument measured .97, demonstrating that the instrument was highly reliable. Qualitative elements were also part of the study, with researchers conducting in-depth interviews with university faculty and focus groups with students.

The research showed that undergraduate university students utilize shortened versions of English words, or coinages, on SNS platforms (Omoera et al., 2018). The results also showed that undergraduate students perceived that it was not ideal to use these coinages when writing assignments or taking exams but still tended to use them anyway. Omoera et al. (2018) further noted that while students do not believe SNS usage is impacting their English writing ability, the results indicated that it is. As such, the researchers offered that future studies should examine the deviational patterns of English words and phrases commonly used by Nigerian youths and also suggested that these commonly used words could potentially be added to a standardized reference of acceptable English words in order to keep up with the trends in SNS culture.

Perceptions of Body Image

Stein et al. (2021) applied cultivation theory to examine how social networks have the potential to influence attitudinal, cognitive, and behavioral response variables. Stein et al. discussed that previous research using social comparison theory was shown to be effective in understanding the way in which media content may affect body image and self-esteem. However, Stein et al. postulated that cultivation theory could lend support to this explanation by examining cultivation-related response variables relevant to cognition, behavior, and attitudes. These outcome variables were represented by changes in weight-related knowledge, self-reported dietary restraint, and attitudes about weight, both inward and outward. The predictor variables were the degree of use of Instagram in hours used per day and the types of actions taken on the platform, such as looking at other profiles, reading comments, making comments, and using the Like function. Using a sample of 228 participants from a German university mailing list, the researchers conducted a cross-sectional survey.

Stein et al. (2021) noted that prior psychological research has shown that a high degree of SNS use can detrimentally impact users' perceptions of self-worth, happiness, and other psychological factors related to well-being. They also discussed that a shortcoming of previous research was a lack of examination of body-related changes as a result of SNS use, and thus they decided to utilize cultivation theory to examine cognitive, behavioral, and attitude-related response variables. The results of their study had several key findings. Based on hierarchical linear regression, the study demonstrated that the more one used SNSs, the more they had stricter views about the weight of others, and this effect was higher for women. The study also showed that a higher degree of SNS use resulted in an increased probability of developing an eating disorder for both genders. However, increased SNS use did not result in reduced satisfaction with one's own appearance, which Stein et al. noted was also found in previous studies. The results of this study support the assumption that the degree of SNS use has the potential to impact users' attitudes and behaviors.

Fear of Crime

Similar to the way Gerbner et al. (1980) conducted studies to determine the relationship between television viewership and fear of crime or victimization, Intravia et al. (2017) sought to determine the relationship between SNS use and fear of crime. Intravia et al. stated that previous research has shown a relationship between SNS usage and negative feelings, social withdrawal, and lower levels of satisfaction and psychological health. While previous studies have not examined a link between SNS and fear of crime or victimization, Intravia et al. pointed out that previous studies have tested for psychological variables associated with fear of crime. Intravia et al. sought to examine this relationship further by using fear of crime as a response variable and SNS use as a predictor. The predictor variables were overall weekly SNS use in minutes, overall

weekly news consumption in minutes, and overall crime/violence consumption in minutes. The response variable was measured by asking respondents questions related to six events. Control variables included demographic, consumption of other media channels, and other variables related to audience effects and fear.

Intravia et al.'s (2017) sample included 955 total participants from 3 universities in the United States, and 918 participants completed the entire survey. The researchers developed a number of key findings from regression analyses, demonstrating a statistically significant relationship between the degree of SNS use and fear of crime, with heavy use resulting in higher rates of fear of crime. Further, the results showed that while overall SNS use is positively related to fear of crime, the predictor variables related to individual types of content, such as news, and crime/violence were not statistically significant. Intravia et al. (2017) noted that previous psychological research showed that increased use of SNSs can intensify certain psychological factors, but their measures of crime/violence consumption may not accurately describe and account for fear of crime among SNS users. The researchers also found that their predictor variables did not account for engagement, which could be relevant to fear-related psychological effects. While this study did not show support for content-specific cultivation, it did show support for cultivation from general SNS use.

Using a similar type of analyses to that of Intravia et al. (2017), Shi (2021) examined the effects of media exposure on fear of crime with a sample of international students. Shi conducted a study to determine the relationship between media exposure and fear of crime by using predictor variables related to exposure to content from U.S. and non-U.S. media for platforms including television, online news, and SNSs. Control variables included measures of respondents' previous victimization experiences and gender to account for potential variable bias

(Shi, 2021). The response variables of fear of crime in the United States and in respondents' home countries were calculated using a cross-sectional survey to measure the emotional fear of respondents to six different types of criminal offenses (Shi, 2021). The sample included 431 students from a variety of countries, and structural equation modeling (SEM) was used to determine the relationship between variables.

Shi (2021) was able to come to three main conclusions. First, non-U.S. SNSs were positively related to international students' fear of crime. Second, attention to crime news was directly and indirectly positively related to the students' fear of crime as perceived risk of victimization. Third, fear of crime and perceived risk of victimization were two separate constructs in relation to the students' reactions to crime. In view of these findings, Shi posited that the consumption of media acts as a primary source of crime-related fears within the international student population. While this study examined a number of different media sources including SNSs, Shi noted that SNSs may play a larger role than traditional media based on high rates of usage and interactive features of SNS platforms. However, the results of the study were only statistically significant with non-U.S. SNSs.

Trusting Society

Gerbner et al. (1980) developed the concept of mean world syndrome based on cultivation theory. Sestir (2020) conducted a study to explore how the usage of SNSs might cultivate specific attitudes in users. Sestir noted that previous studies had shown a link between SNS use and high levels of social trust as well as greater life satisfaction overall. He also mentioned that previous research had found negative associations related to SNS use, such as conflict with family, loneliness, and negative social comparison or jealousy within close relationships. Noting the mixed results from previous studies, Sestir hypothesized that increased

SNS use would result in positive outcomes related to social expectations or beliefs, especially when high attention or engagement occurs. As such, Sestir developed the construct of *friendly world syndrome* in contrast to *mean world syndrome*, as SNS use may increase one's positive perceptions of social support and the ability to rely on others.

Sestir (2020) hypothesized that increased SNS intensity would positively correlate with scores of friendly world syndrome. In this study, the predictor variable is SNS intensity scores, while the response variable is friendly world syndrome scores. He also discussed the use of prevalence estimates in prior studies related to perceptions of crime and violent behavior. Sestir's study involved the participation of 226 respondents via the Mechanical Turk system. Cross-sectional surveys were administered using the social networking intensity (SNI) scale, friendly world scale (FWS), and prevalence estimates. Conducting a series of correlation analyses, the results of the study demonstrated that increased use was positively correlated with positive, trusting social attitudes, though there were no significant correlations between prevalence estimates and SNS use. The results of this study support the assumption that increased SNS use may cultivate certain attitudes in users.

Attitudes Toward Police

Building off of their previous study on media use and fear of crime in the U.S., Intravia et al. (2018) conducted another study to examine the relationship between media use across various channels and participants' attitudes toward police legitimacy. Intravia et al. discussed that previous research has shown that when television viewers watched more news, they believed that police were more likely to engage in misconduct, while another study showed that those who watched more crime-related content thought that police were more likely to use force only when necessary. Intravia et al. also noted that when looking at distribution by race, White people were

more likely to trust the police the more they watched the news, while Black and Latino people were more likely to distrust the police. Intravia et al. posited that previous research supports the notion that media consumption influences public perceptions and attitudes toward police. While previous studies have examined more traditional media channels in relation to perceptions of police, little is known about exposure to Internet and SNSs (Intravia et al., 2018).

Intravia et al. (2018) used a cross-sectional survey to gather information about participants' exposure to certain media channels in relation to news content. The response variable used in the study was attitudes toward police legitimacy, which was measured by using a published scale designed for measuring attitudes toward police based on eight questions. The predictor variables were measures of media consumption represented by how much they watch various types of media, such as local television news, national television news, television crime shows, local newspapers, SNSs, and online news websites. The controls used in the study were demographics, personal police contact, vicarious police contact, perception of neighborhood problems, and self-control. Using ordinary least squares (OLS) regression, the researchers had a number of key findings. The results demonstrated a negative relationship between online news and attitudes toward police legitimacy, while SNS use resulted in more positive attitudes toward police legitimacy, especially among White participants, demonstrating cultivation effects from SNS use (Intravia et al., 2018).

Attitudes Toward Brands

Interested in how SNS use cultivates attitudes toward brands, Wei et al. (2020) conducted a qualitative study to explore how microblogging via brand Twitter pages influenced follower attitudes. They explained that microblogging is a recent form of branding that involves the use of short sentences, links, or video images to engage consumers in real-time. According to Wei et

al., Twitter is one of the most popular microblogging sites, which uses a "140-letter micro-post messaging system" (p. 506) and hashtags to help connect users to tweets. Wei et al. further noted that little research exists that examines the effects of stimulus-based cultivation on Twitter as well as how Twitter microblogging may cultivate specific attitudes in consumers toward brands. The authors explained that there is a research gap in how microblogging messages may shape the attitudes of consumers in relation to brands over a period of time. The method used in the study involved a natural setting in which participants were required to follow, observe, and track the tweets of a chosen brand on Twitter for 12 consecutive weeks.

The sample of the Wei et al. (2020) study included 10 faculty and staff from a university who were selected from 87 applicants. The 10 participants each received $500 in compensation for their participation. The participants were required to log the answers to six questions at the end of every week that were related to the brand, Twitter platform, tweets, and engagement with the brand on Twitter. To analyze the data, the researchers utilized a three-step process in which they read and interpreted transcripts, shared notes and findings, and conducted a peer debriefing process. Based on the coding of recurrent themes within the transcripts, the researchers found that the main positive theme was followers enjoyed tweets about up-to-date and relevant information related to brand quality, brand identity, and tips about the brand. A major negative theme was that brands were either sterile or posting irrelevant and confusing content. Out of the 10 participants, six stated that microblogging improved overall attitudes toward the brand, while three stated there was no change, and one participant developed a negative attitude toward the brand. Based on the findings, Wei et al. argued that microblogging via Twitter cultivates certain attitudes toward brands depending on the type of content posted and engagement with it.

Building off of this study, Wei (2022) later sought to examine the cultivation of brand knowledge and purchase intention with followers of specific brands on Twitter. Wei was interested in testing three different hypotheses related to cultivation effects of followers versus nonfollowers, younger versus older followers, and brand type, such as hedonic versus utilitarian. Wei developed two separate cross-sectional surveys—one was given before participants began following the brand and another after following the brand. The surveys included 10 questions designed to measure brand knowledge, purchase intentions, and age. Three experiments were conducted for each hypothesis, and the sample sizes for each experiment were 31, 50, and 36 undergraduate students.

Wei (2022) found that the first experiment showed that participants who followed Nike on Twitter were likely to have greater purchase intentions and consumer knowledge, which Wei posited as consistent with the mainstreaming effects discussed in cultivation theory. In the second experiment, results showed that people who followed a hedonic brand versus a utilitarian brand were more likely to have higher purchase intentions and brand knowledge. Wei postulated that this was due to Nike posting tweets that were more emotional and inspirational, whereas Subway's tweets were more informational and similar week-to-week, thus appearing boring. The results of the third experiment indicated that age was a significant force in the cultivation effects on purchase intentions and brand knowledge, and a higher impact was found for younger followers. Wei posited that this result was likely due to younger followers spending more time on Twitter, which is consistent with the concept of frequency or degree of use in cultivation theory.

Perceptions of Racism

Shin et al. (2023) conducted a study to examine how Asians experience COVID-related racism outside of the U.S. both personally and vicariously as a result of SNS use. The researchers noted that the COVID-19 pandemic resulted in a worldwide rise in discrimination toward people of Asian descent and that while all age groups have been affected by this discrimination, younger individuals appear to be more aware of and expressive about this pattern of behavior. Shin et al. offered that SNSs have functioned as platforms for communicating anti-Asian sentiment as a result of the COVID-19 pandemic. While previous studies have explored first-hand individual experiences of discrimination, little research has focused on second-hand indirect discrimination (Shin et al., 2023). As a result, Shin et al. sought to examine user experiences of discrimination both directed at oneself and vicariously.

Using Qualtrics, Shin et al. (2023) recruited a total of 413 young adults who reside in Australia, are aged 16–30, and use SNSs regularly. A cross-sectional survey was implemented to gather information on SNS use related to COVID-19, racial discrimination experienced on SNSs, concerns about real-world racial discrimination, negative emotions experienced during COVID-19, and life satisfaction in Australia. Utilizing demographic control variables, such as gender, age, and residential status, Shin et al. used SEM to test the relationships between SNS use and individual and vicarious experiences of racism.

Shin et al. (2023) found that there is a positive association between the degree of SNS use and experiences related to both individual and vicarious racism. They further concluded that SNS activity is positively associated with experiences of racism and is also positively associated with increased anxiety in Asian people who used SNSs to view content related to COVID-19.

Attitudes Toward Data Privacy

To understand how SNSs may cultivate perceptions of privacy, Tsay-Vogel et al. (2018) conducted a study to test for associations between Facebook use and privacy perceptions. The researchers hypothesized that there would be an association between Facebook use and perceptions of decreased threats to general privacy, threats to online privacy, and support for governmental protection. Tsay-Vogel et al. posited that based on the omnipresence of self-disclosure on SNSs, prolonged exposure to SNSs may affect perceptions associated with disclosure practices. Using a longitudinal study design, researchers tested a sample of 2,789 participants with a cross-sectional survey measuring Facebook use and privacy perceptions (i.e., threat to general privacy, threat to online privacy, and support for governmental privacy protection).

Based on Tsay-Vogel et al.'s (2018) path analysis of the data, they found that Facebook use was negatively associated with the privacy perception variables measured, thus supporting the hypothesis. This supports the notion that SNSs have effects on the perceptions of users based on the degree of use.

In a similar vein, Tang et al. (2021) conducted a study on the cultivation effects of SNS use and information security or privacy in an effort to understand how government pages on SNSs related to COVID-19 scams cultivate certain perceptions in users around response variables such as perceived severity, perceived vulnerability, self-efficacy, and response self-efficacy, which was hypothesized to impact security behavior. The predictor variable in the study was government social media (GSM) participation. The controls used in the study were demographic variables related to age, gender, income, and education. The study employed an online cross-sectional survey by providing participants with a link to Wenjuanxing, an Internet

service in China for conducting online surveys. Tang et al. mentioned that the target audience for the study was users of WeChat who also followed at least one GSM throughout the COVID-19 pandemic. To incentivize participation, researchers offered participants the equivalent of U.S. $0.75 to complete the survey. The study garnered a total of 240 completed surveys, which were then analyzed using partial least squares structural equation modeling (PLS-SEM).

According to Tang et al. (2021), the study showed that cultivation theory acts as a set of "valuable lenses" (p. 8) through which GSM's impact on peoples' information security behaviors can be predicted. The researchers posited that GSM interaction around messages related to COVID-19 scams has the potential to cultivate information security behaviors, making SNS users aware of the seriousness of a threat. Based on the findings from this study and the others presented here, the degree of SNS use can be used to predict certain behaviors, attitudes, and perceptions in users. In the next section, studies exploring the psychological impact of SNS use will be presented.

Psychological Effects of SNS Use

The following sections will discuss studies that examine the relationship between the degree of SNS use and various psychological traits, such as depression, anxiety, psychological distress, and well-being. While a number of studies indicated that SNS use may be positively correlated with the first three of these traits, one study demonstrated positive impacts of increased SNS use related to well-being. One researcher suggested that it may be that people with depression simply have a higher tendency to use SNSs more. A study discussing the temporal and directional associations between SNS use and depression showed that while people were not depressed before SNS use, they were afterward, demonstrating that reverse causation may not be supported.

These topics are appropriate for discussion here because the purpose of this study is to determine the relationship between SNS use and the psychological constructs optimism and pessimism. The literature on pessimism as a construct presents a link between pessimism and depression, and there is also a link between optimism and physical and psychological well-being. The literature demonstrates support for a positive relationship between SNS and psychological traits related to these constructs, which will be discussed in the next section.

Degree of SNS Use and Depression, Anxiety, and Psychological Distress

Keles et al. (2020) conducted a thorough review of the literature pertaining to SNS use and its influence on psychological characteristics in adolescents, specifically in relation to depression, anxiety, and psychological distress. They argued that it is important for researchers to understand the impact SNS use can have on the well-being of adolescents, especially since there has been an increase in mental health issues among this population. The method used for the study was narrative synthesis due to the variety of literature involved, which prevented them from conducting a meta-analysis. Keles et al. posited that they could consider mediating, confounding, and moderating variables that would be overlooked in a meta-analysis. Their literature search that initially resulted in 6,598 articles but was narrowed to 13 articles based the criteria that studies involved participants that were 13–18 years of age, had a measurement of SNS use, used relevant psychological outcomes (e.g., depression, anxiety, psychological distress using valid instruments), and were peer reviewed.

Keles et al. (2020) noted four common themes related to SNSs: time spent, investment, addiction, and activity. They found that studies related to the frequency of SNS use and psychological symptoms were variable in their outcomes, noting that some studies presented negative associations with depressive symptoms, while others showed no significant or even

positive associations. Keles et al. further found that some studies showed positive associations between Facebook activity and depressive states, while others did not. The authors noted that the more invested in SNSs adolescents were, the higher their depressive states. They further found that previous literature saw significant associations between Facebook addiction and depressive states. Overall, it can be observed from this study that as the use of SNSs increases either in frequency or total investment, depressive states appear to increase. However, some studies do not support this conclusion.

Degree of SNS Use and Depression, Conduct Problems, and Heavy Drinking

Brunborg and Andreas (2019) noted that SNS use has become prevalent among adolescent youths around the globe, and according to a major Norwegian reporting authority, 90% of adolescents use SNSs. They further claimed that some of the major risk factors relative to adolescent health and well-being are depression, conduct problems, and episodic heavy drinking. Recent studies have shown that there is a relationship between SNS use and a number of negative outcomes, and based on cross-sectional studies, this may result in poor mental health (Brunborg & Andreas, 2019). They also found that while a number of studies have explored the impact of SNS use on psychological measures, this area of study is still relatively new, and findings have been inconsistent or limited as a result of "various operationalizations of SNS involvement, scarcity of longitudinal investigations, and a lack or consideration of confounding variables." (p. 203) As a result, Brunborg and Andreas sought to conduct a study determining the associations between SNS use and (a) symptoms of depression, (b) conduct problems, and (c) heavy drinking in adolescents.

Brunborg and Andreas (2019) utilized archival data from a previous project called MyLife, which involved 884 adolescent participants at baseline and 769 at a 6-month follow-up.

The predictor variables in the study were time on SNSs, and response variables were symptoms of depression, conduct problems, and episodic heavy drinking. Control variables used in the study included sports practice, unsupervised leisure activities, and peer relationship problems. To help determine the association between variables, Brunborg and Andreas conducted first differences (FD) regression. The results of the study showed significant associations between SNS use and depressive symptoms, which the authors speculated was a result of reduced face-to-face interaction. The results also indicated that an increase in SNS use may result in an increase in conduct problems as well as episodic heavy drinking. Among the confounding variables, it was determined that peer relationship problems are a stronger predictor of depression and conduct problems as opposed to SNS use. Finally, it was found that an increase in unsupervised time was a predictor of conduct problems, depression, and episodic heavy drinking.

Degree of SNS Use and Hyperarousal and Depression

Lee et al. (2020) argued that the COVID-19 pandemic will likely result in a number of long-term effects on the mental health of the global population. They posited that as a result of COVID-19 lockdown regulations and the resultant isolation and psychological distress, there is an increased risk of depression. Along with that, the authors contended that increased use of SNS may also result in an elevated risk of loneliness and depression. As a result, Lee et al. sought to explore the synergistic impact of SNS use and psychological distress on depression levels among Chinese participants during the COVID-19 pandemic. The sample consisted of 3,064 adults from mainland China, and a cross-sectional survey was implemented to measure SNS use, psychological distress, and depression levels. In particular, participants were measured on SNS use related to COVID-19 information.

Lee et al. (2020) analyzed the results using a synergy index and relative risk due to interaction model while controlling for age, sex, educational attainment, marital status, living arrangements, and healthcare/nonhealthcare worker status. The results showed that increased SNS use predicted greater severity of depressive symptoms. More specifically, when accounting for synergistic effect, it was found that participants who reported prolonged SNS use along with significant symptoms of distress, specifically hyperarousal, were at greater risk than with either variable by itself. Based on these results, Lee et al. posited that increased SNS use is associated with an increased risk of depression and more severe symptoms of depression and loneliness. The researchers also noted that during a public health crisis, there is an increased risk of these associations as a result of SNS use and the spread of misinformation. The results of this study are congruent with previous studies demonstrating how SNS use may be related to depressive symptoms, especially when individuals are hyperaroused as a result of psychological distress.

Degree of SNS Use and Well-Being

Ostic et al. (2021) conducted a study to determine the effects of SNS use on psychological well-being. The researchers found that previous literature has shown concern around SNS use and addiction, especially as it relates to psychological well-being. Excessive use of SNSs may result in reduced interaction with peers, such as friends and family, which can lead to smartphone addiction, anxiety, loneliness, and depression. While SNS use has been shown to be positively associated with many negative psychological traits, Ostic et al. posited that increased SNS use may result in a sense of connectedness with relevant others and could potentially reduce social isolation. The authors asserted that while negative attributes are associated with SNS, previous studies have also shown positive benefits, such as developing

one's presence, identity, and reputation, which assist in social interactions and building relationships, which may be correlated with social support.

Ostic et al. (2021) implemented a cross-sectional survey for 940 SNS users from Mexico, measuring a number of different constructs to be used with SEM, such as SNS use, social capital, social isolation, smartphone addiction, phubbing, and psychological well-being. Conducting SEM, the researchers combined factor and multivariate regression analysis to understand the relationship between the latent constructs (Ostic et al., 2021). The results demonstrated that when SNS users perceive that social communication may help overcome obstacles to interaction and virtual self-disclosure, SNSs may be used to improve trust and develop social associations (Ostic et al., 2021). The results also demonstrated that students are more likely to use SNSs for social support, which subsequently leads to social belongingness. In the case of this study, it stands to reason that the perceptions or attitudes of the user may ultimately affect whether or not SNSs result in positive benefits, such as social belongingness.

Reverse Causation Perspective

According to Hartanto et al. (2021), the World Health Organization (WHO) found that 264 million people across the globe experience depression, which they associated with feelings of low self-esteem, disturbed sleep, impaired concentration, along with other maladaptive issues. Research has shown that one of the main risk factors for developing depression is SNS use, and this is particularly so in studies using cross-sectional survey data (Hartanto et al., 2021). Hartanto et al. posited that while many studies show the directionality of SNS use perpetuating symptoms of depression, some studies present the notion that instead people who already have these symptoms are more likely to use SNSs. Hartanto et al. discussed that the literature has shown depressive symptoms may drive SNS use based on an attempt to subdue feelings of negativity or

unfulfilled psychosocial needs. In order to support their assumption, Hartanto et al. conducted a meta-analysis of the psychosocial literature pertaining to SNS use and depressive symptoms, wherein depressive symptoms were found to drive SNS use instead of the other way around.

Hartanto et al. (2021) presented that while a longitudinal research design doesn't support causative conclusions, it may allow for the temporal ordering of prominent variables. The authors discussed a longitudinal study that found that SNS use was associated with reduced psychological distress as a result of the social opportunities found on SNSs. Further, the researchers also mentioned a study that found depressive symptoms in adolescent girls predicted problematic SNS use. Reviewing experimental studies, Hartanto et al. argued that most experimental studies conducted thus far have manipulated SNS use variables to isolate effects on depression because it is harder to do the reverse and manipulate depression. The researchers also suggested that "blaming SNS" (p. 2) dominates over other theoretical approaches. That being said, Hartanto et al. also presented a review of the experimental literature, noting that regulated usage may be an effective alternative to abstinence in managing the psychosocial effects of SNS use.

Temporal and Directional Associations With Depression and SNS Use

According to Primack et al. (2021), depression has become an increasingly prevalent condition in the United States and was declared a major cause of disability globally by the WHO. The authors noted that while many things contribute to depression, of particular recent interest in the literature is the role of SNS use. While previous research has shown an association using cross-sectional data for statistical analyses, little research has been conducted to demonstrate temporal associations where it has been directionally shown that SNS use contributes to depression or people with depressive symptoms are driven to SNS use. Primack et al. (2021)

conducted a longitudinal study with a sample of U.S. adults between the ages of 18 and 30 to determine the independent temporal associations between SNS use and depression while also controlling for baseline differences in demographic characteristics. Baseline data was collected on participants' sociodemographic and personal traits as well as depression levels and SNS use levels. Six months later, data were collected again, and 1,339 of the total 2,408 respondents provided follow-up data.

The results of the study showed a strong bivariable association between baseline SNS use and the development of depression, with the highest quartile of SNS use having 3.41 times the chance of developing depressive symptoms. Further, the results demonstrated that the reverse is not true. For example, there was no association between depressive symptoms and increased SNS use. The results of the study also demonstrated that baseline SNS use was strongly and independently associated with developing depression throughout the 6-month period between surveys. The presence of depression at baseline was not associated with an increase in SNS use over the 6-month period. The results of the study showed that Hartanto et al.'s (2021) reverse causation argument may need more support, especially when Primack et al. (2021) looked at both temporal directions and found that SNS use results in depression but not the reverse.

Understanding the Constructs of Optimism and Pessimism

Optimism Construct

According to Barnett and Anderson (2020), optimism relates to having positive expectations about future outcomes and can further be segmented into two different conceptualizations. First, optimism can be viewed as referencing expectations about specific situations, which is referred to as situational optimism (Barnett & Anderson, 2020). Second, optimism may refer to more general expectations about future outcomes, which is referred to as

dispositional optimism (Barnett & Anderson, 2020). Carver et al. (2010) posited that optimists seem to be different from pessimists in that optimists demonstrate stable coping tendencies and responses when dealing with stressful situations, noting a contrast between acceptance and active denial. Carver et al. also noted that denial occurs when a person refuses to accept the reality of a situation or tries to maintain a worldview that is not or is no longer representative of the truth. In the field of psychology, Barnett and Anderson showed that optimism was once considered unidimensional (i.e., a bipolar construct with pessimism); however, more recent literature has theorized that it may be better measured and represented as two separate constructs (Dember et al., 1989).

When considering the possible adverse effects of optimism, Carver and Scheier (2014) presented two recent findings that support potential negative effects, such as too much confidence or persistence, which can sometimes be a bad thing. When providing negative examples of optimism, Carver and Scheier offered the activity of gambling, noting that research has shown that optimists have more positive expectations toward winning than pessimists, which results in optimists not reducing bets after poor outcomes. A benefit of lower levels of optimism was found for entrepreneurs, as these lower levels predicted higher success with new ventures (Carver & Scheier, 2014). For those who want to increase levels of optimism, Carver and Scheier recommended 2 weeks of imagining one's best possible self for 5 days, which research has demonstrated can temporarily improve optimism.

Pessimism Construct

According to Barnett and Anderson (2020), pessimism is when people have negative expectations in relation to future outcomes. Carver et al. (2010) described pessimists as being less persistent and more likely to give up, noting that research supports the idea that these giving-

up tendencies in pessimists lead to adverse outcomes. They also noted that one of these adverse effects is excessive use of alcohol, which pessimists are generally more vulnerable to than optimists. Barnett and Anderson (2020) posited that pessimists may experience heightened awareness during stressful events, and when repetitive stressors are present, the chances of poor health are exacerbated. They further said that pessimists often see stressful events as more difficult, which requires more effort, and the expression of negative emotions and behavioral disengagement could increase or influence negative views, resulting in negatively impacted mental capacities. Linking the concept of pessimism with giving up, Carver et al. (2010) found that pessimism may not just lead to people giving up on specific goals but also on their lives overall. Barnett and Anderson (2020) supported this notion, claiming that pessimism is a strong predictor of depression and suicidal behavior in adults.

Development and Use of the OPI

According to Dember et al.'s (1989) discussion of optimism and pessimism as a bipolar construct, optimism represents a bias in perceptions and expectations related to positive outcomes of situations, while pessimism represents a negative bias. The purpose of Dember et al.'s study was to develop an instrument for measuring optimism and pessimism while accounting for validity and reliability. The researchers noted that while developing the OPI, it became apparent that while the instrument was valid and reliable, resulting measures demonstrated that the two constructs may need to be represented as entirely separate rather than bipolar. So, they developed two separate optimism and pessimism scales. When presenting the literature on optimism and pessimism, Dember et al. noted it had found that optimistic people tend to be nondepressed as a result of an illusion of control or engagement in self-enhancing

distortions, while depressed people tend to have more realistic self-perceptions that become less realistic as depression lifts.

In developing the OPI, Dember et al. (1989) conducted two main studies. The first study focused on the analysis of internal consistency, while the second study focused on construct validity and test-retest reliability. These specific statistics are discussed in the Instrument section of Chapter 3, which details the validity and reliability of the OPI. The internal consistency of the OPI was .83 and .88 (Study II) for optimism and pessimism, respectively, while test-retest reliability was .75 for optimism and .84 for pessimism (Dember et al., 1989). Dember et al. clarified that validity data included correlations with "social desirability, Rotter's I-E Scale, two measures of anxiety and various scales of Defense Mechanisms Inventory." (p. 116) They also noted that single-item predictions and self-ratings supported the validity of the constructs. The questions about the validity of a bipolar construct resulted from low correlation coefficients between the two constructs, resulting in them eventually being separated.

Summary

Chapter 2 has offered a review of the literature, a brief review of the literature search strategy, a review of the relevant communication tradition and applicable theory, an expansive discussion of the theoretical foundations of cultivation theory, a thorough review of the literature pertaining to the application of the theory in relation to SNS use, and a discussion the relevance of the psychological constructs of optimism and pessimism. The sociopsychological communication tradition was found to be the most appropriate for discussion here. This is premised on this tradition's relevance to cultivation theory and the general purpose of this study. The theoretical foundation of cultivation theory was also presented, including the origins and development of the theory, seminal works, criticism, and relevance to this study.

Also discussed were studies pertaining to the application of cultivation theory and the degree of SNS use to measure impacts on attitude, perceptions, knowledge, emotions, and beliefs. Literature demonstrating a relationship between SNS use and depression, anxiety, psychological distress, and well-being was discussed as well. Based on the use of optimism and pessimism as response variables, literature on these constructs were presented, including research supporting the development and use of the OPI scale for measuring them. The research method and design, instrument, sample population, and data collection and analysis procedures will be discussed in the next chapter.

Chapter 3: Methodology

Overview

The purpose of this chapter is to present the research method and design chosen for this study. The purpose of the study as well as the research questions and hypotheses will be reintroduced to help support the rationale for the research method and design. Following the explanation of the research method and design, the population chosen and the instrument used for collecting data will be discussed in addition to the quality of the evidence, data collection and analysis procedures, and ethical procedures followed.

Purpose Statement

The purpose of this study is to address a gap in the literature concerning the application of cultivation theory to determine the relationship between the degree of SNS use and optimism/pessimism in users while also investigating the effects of increased SNS use on psychological factors such as optimism and pessimism. A correlational, quantitative study was conducted using a cross-sectional, analytical survey instrument with questions related to demographics, degree of SNS use, main SNS platform used, main SNS content viewed, number of SNS connections, and optimism/pessimism. The predictor variables in the study were the degree of SNS in hours per day and total lifetime consumption in years as well as number of times accessed per day. Control variables included age, gender, educational level, race, marital status, household income, and employment. The moderating/mediating effects or interactions of SNS platform, content viewed, and number of connections were determined. The response or dependent variables were the mean scores measured from the OPI scale. Stepwise multiple linear regression was conducted to test for a relationship. To ensure the fit of the model, the eight

assumptions of multiple linear regression were tested. Bootstrapping and SEM were used to test the mediating and moderating effects of platform, content, and number of connections.

Research Questions

This study was led by six main research questions (RQs).

RQ 1. How are OPI optimism and pessimism mean scores distributed based on the degree of SNS use and different demographic and SNS characteristics?

RQ 2. What is the relationship between the degree of SNS use and OPI scale optimism and pessimism mean scores when not controlling and controlling for demographic characteristics?

RQ 3. When controlling for demographics, does the degree of SNS use have a greater effect on optimism or pessimism?

RQ 4. What are the moderating effects of the primary SNS platform used, primary SNS content viewed, and number of SNS connections on the relationship between the degree of SNS use and OPI optimism and pessimism scores?

RQ 5. What are the mediating effects of the primary SNS platform used, primary SNS content viewed, and the number of SNS connections on the relationship between the degree of SNS use and OPI optimism and pessimism scores?

RQ 6. What are the conditional effects of main SNS platform, type of SNS content viewed, and number of SNS connections in predicting optimism and pessimism based on degree of SNS use?

Hypotheses

Hypothesis 1A (RQ 2)

***H*01**. There is no statistically significant relationship between the degree of SNS use and OPI scale mean optimism scores when not controlling for demographic characteristics.

***H*a1**. There is a statistically significant relationship between the degree of SNS use and OPI scale mean optimism scores when not controlling for demographic characteristics.

Hypothesis 1B (RQ 2)

***H*01**. There is no statistically significant relationship between the degree of SNS use and OPI scale mean pessimism scores when not controlling for demographic characteristics.

***H*a1**. There is a statistically significant relationship between the degree of SNS use and OPI scale mean pessimism scores when not controlling for demographic characteristics.

Hypothesis 2A (RQ 2)

***H*01**. There is no statistically significant relationship between the degree of SNS use and OPI scale mean optimism scores when controlling for demographic characteristics.

***H*a1**. There is a statistically significant relationship between the degree of SNS use and OPI scale mean optimism scores when controlling for demographic characteristics.

Hypothesis 2B (RQ 2)

***H*01**. There is no statistically significant relationship between the degree of SNS use and OPI scale mean pessimism scores when controlling for demographic characteristics.

***H*a1**. There is a statistically significant relationship between the degree of SNS use and OPI scale mean pessimism scores when controlling for demographic characteristics.

Hypothesis 3A (RQ 4)

***H*01**. There is no statistically significant moderation between primary SNS platform used on the relationship between the degree of SNS use and optimism mean scores.

***H*a1**. There is a statistically significant moderation between primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 3B (RQ 4)

***H*01**. There is no statistically significant moderation between primary SNS content viewed on the relationship between the degree of SNS use and optimism mean scores.

***H*a1**. There is a statistically significant moderation between primary SNS content viewed on the relationship between the degree of SNS use and optimism mean scores.

Hypothesis 3C (RQ 4)

***H*01**. There is no statistically significant moderation between the number of SNS connections on the relationship between the degree of SNS use and optimism mean scores.

***H*a1**. There is a statistically significant moderation between the number of SNS connections on the relationship between the degree of SNS use and optimism mean scores.

Hypothesis 4A (RQ 4)

***H*01**. There is no statistically significant moderation between primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1**. There is a statistically significant moderation between primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 4B (RQ 4)

***H*01**. There is no statistically significant moderation between primary SNS content viewed on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1**. There is a statistically significant moderation between primary SNS content viewed on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 4C (RQ 4)

***H*01**. There is no statistically significant moderation between the number of SNS connections on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1**. There is a statistically significant moderation between the number of SNS connections on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 5A (RQ 5)

***H*01**. There is no statistically significant mediation between primary SNS platform used on the relationship between the degree of SNS use and optimism mean scores.

***H*a1**. There is a statistically significant mediation between primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 5B (RQ 5)

***H*01**. There is no statistically significant mediation between primary SNS content viewed on the relationship between the degree of SNS use and optimism mean scores.

***H*a1**. There is a statistically significant mediation between primary SNS content viewed on the relationship between the degree of SNS use and optimism mean scores.

Hypothesis 5C (RQ 5)

***H*01**. There is no statistically significant mediation between the number of SNS connections on the relationship between the degree of SNS use and optimism mean scores.

***H*a1**. There is a statistically significant mediation between the number of SNS connections on the relationship between the degree of SNS use and optimism mean scores.

Hypothesis 6A (RQ 5)

***H*01**. There is no statistically significant mediation between primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1**. There is a statistically significant mediation between primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 6B (RQ 5)

***H*01**. There is no statistically significant mediation between primary SNS content viewed on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1**. There is a statistically significant mediation between primary SNS content viewed on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 6C (RQ 5)

***H*01**. There is no statistically significant mediation between the number of SNS connections on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1**. There is a statistically significant mediation between the number of SNS connections on the relationship between the degree of SNS use and pessimism mean scores.

Research Method and Design

General Method

The general research method for this study is quantitative. Jensen (2011) described quantitative research as characterized by measurements and analytical processes to determine relationships between variables. This study was conducted to determine the relationship between the degree of SNS use and other demographic characteristics with the mean scores of the OPI developed by Dember et al. (1989). Gunter (2011) noted that in quantitative research a concept is represented by “an abstract idea that embodies the nature of a phenomenon” (p. 238) and that

"television viewers can be differentiated by the amount of viewing into values such as light, medium, or heavy viewers" (p. 239).

This supports the use of a quantitative research method because cultivation analysis, as developed by Gerbner (1970) and Gerbner et al. (1986), had media use as an explanatory concept and also the predictor variable when determining the relationship between television viewership and perceptual indicators that measure the accuracy of participants' perceptions of real-world crime and violence. Fittingly, Gerbner's research utilized a quantitative method when seeking to determine this relationship. Most cultivation research uses a combination of descriptive statistics, sometimes quantitative content analysis, and always some form of regression analysis—simple linear regression, hierarchical/stepwise, or multiple linear regression—to determine a relationship between variables. It should also be noted that while Hirsch (1980) and Hughes (1980) critiqued the methods presented by Gerbner (1970) and Gerbner et al., (1980), the general quantitative method was not criticized but supported. Instead, the criticisms concerned the lack of demographic controls used within the model when that data was available, which was later accounted for in subsequent research efforts.

Based on the definition of quantitative methods and based on the methods typically used in cultivation analysis, this method was determined to be the most appropriate for determining the relationship between the degree of SNS use and mean OPI scores.

Specific Design

The specific design chosen for this research study was nonexperimental and correlational because the purpose of this study is to determine the relationship between the degree of SNS use and mean OPI scores to understand how SNS use may impact user perceptions. A nonexperimental design was employed because there was no manipulation of an independent

variable to test for causation (Gunter, 2011). Since this study was conducted to understand the correlation between two or more variables, a correlational design was the most appropriate. This study used a survey to collect data from the sample, and the data acquired was used in correlation analyses to determine a relationship and predict measures of optimism and pessimism in users based on the degree of SNS use as well as other demographic controls. According to Gunter (2011), a correlation represents the association between two or more variables, and when considering a more advanced level of analysis, researchers may use more advanced statistical analyses, such as simple or multiple linear regression, to determine how the variables interact.

Previous Uses of the Selected Method

When Gerbner (1970) was first developing cultivation theory, the CIP was conducting a quantitative content analysis of prime-time television to better understand its themes. These analyses determined that violence and criminality were overrepresented on television (Gerbner, 1970). Gerbner and colleagues later conducted a nonexperimental, correlational research study in which analytical surveys were used to collect viewership and demographic data as well as measure cultural indicators related to perceptions of crime and violence (Gerbner et al., 1980). The data collected from the surveys was used to predict how levels of television viewership were related to perceptions of crime and violence in the real world. While the results determined that there was a statistically significant relationship, the variance explained by the degree of television viewership was low.

Doob and McDonald (1979) were also two early researchers in the area of cultivation analysis. They sought to replicate and explain the findings of the initial study by Gerbner (1970) to determine whether there was a relationship between television viewership and perceptions of crime in Toronto, Canada. However, the caveat with Doob and McDonald's study was that they

were controlling for high and low crime areas. Doob and McDonald first conducted Pearson correlations to determine the linear association between the response to cultural indicator questions and the amount of television viewing and television violence. The researchers then conducted stepwise linear regression to determine the relationship between nine predictor variables (high/low crime, city/suburb, interaction, sex, age, total television viewed, and consumption of television violence, radio news, and newspapers) and the dependent variable of perceived crime. The overall results of the study supported the results of Gerbner and his associates; however, Doob and McDonald discussed that when controlling for high- and low-crime neighborhoods, only low-crime neighborhoods demonstrated a significant relationship. Doob and McDonald posited this is because people in high-crime neighborhoods have a higher experience of crime.

Since cultivation analysis is being used in this study to determine the relationship between the degree of SNS use and mean OPI scores, studies that examined similar relationship are particularly relevant. In a seminal study conducted by Hermann et al. (2020), the researchers were interested in determining the relationship between SNS use, specifically Facebook, and how the degree of use cultivated users' ethnic diversity perceptions. In this study, the cultural indicators were users' perceptions of ethnic diversity, and the predictor variables were the amount of Facebook use and other demographic information. As in previous cultivation studies, stepwise multiple regression determined the relationship, and the results showed that increased Facebook use predicted more positive perceptions of ethnic diversity.

Based on the historical and current use of nonexperimental, correlational research in conducting analyses to determine the relationship between the degree of media exposure and

specific cultural indicators, it stands to reason that the selected research method and design are appropriate and adequately supported in the literature.

Participants

This study sought participants in the general United States population that were 18 years of age or older and actively using SNS for at least one year. This sample is considered a nonprobability, purposive sample due to not being randomly chosen but based on the guidelines selected and the availability of the participants. While it was posited that those below 18 years of age are potentially valuable research subjects, the main concern was ensuring that the data quality would be as high as possible. As such, it was assumed that participants that are 18 years of age or older will understand the questions being asked and would be able to respond to the questions in a reliable manner.

Study participants were limited to the geography of the United States to ensure that the sample experiences SNS use under the same governmental regulatory requirements and because this population has not yet been studied with cultivation analysis in regard to SNS use. A total of 529 people started the survey, with a total of 513 participants completing the survey, resulting in a 96.98% completion rate. After cleaning the data, 414 of total surveys, or 78.26%, remained valid for analysis. The gender distribution of the data was 51% (213) male and 49% (201) female. Racial distribution of the data showed that respondents were 69% (287) White, 11% (46) Black, 9% (37) Asian, 7% (30) Hispanic, 2% (10) other, and 1% (4) American Indian or Alaska Native.

Instrumentation

This study utilized a cross-sectional, analytical survey instrument comprised of three main sections (see Appendix A). The first section consisted of what Terrel (2016) refers to as a

demographics form, which is used to collect information such as age, gender, income, race, location, and education level. This study utilized demographic information as covariate or control variables based on the critical works in the field of cultivation analysis. The next section in the survey instrument consisted of eight questions related to SNS use. This was a necessary section since this study was conducted to determine the relationship between the degree of SNS use and OPI mean scores. The final section of the survey instrument consisted of the OPI. This is a well-tested and well-documented instrument for determining levels of optimism and pessimism in individuals. The validity and reliability of the OPI will be expounded on in the Quality of Evidence section. In the following sections, the three parts of the survey will be discussed further.

Demographic Data Form

According to Terrel (2016), most studies require researchers to collect demographic data on a *demographic data form*. Terrel posited that demographic data forms permit researchers to describe participant characteristics and help understand other data collected. In this study, data on a number of different demographic characteristics were collected. Data was collected on educational level, gender, race, age, marital status, employment, and income. These control variables were included to determine their roles in the interactions under study.

Social Networking Site (SNS) Degree of Use Form

In the section of the survey instrument that collected data related to the degree of SNS use, eight total questions were asked, three of which are related to the degree of SNS use. The first question asks the study participants what SNS they use the most, which can provide insight into how different platforms may contribute differently to the relationship between SNS use and OPI scores. The three questions asked regarding the degree of SNS use concern hours used per

day, number of times accessed per day, and total number of years of using SNS. The purpose of collecting these degree of use variables was to help inform how each predictor variable contributed to the relationship between the degree of SNS use and levels of optimism and pessimism. For example, it may be that OPI scores are affected more by total time used in years as opposed to hours per day or the number of times accessed (or vice versa).

OPI

Name and Developer

The OPI was developed by Dr. William Dember with the help of his colleagues in 1989 (Dember et al., 1989).

Appropriateness to Current Study

The OPI scale was appropriate to the current study based on the purpose of this study to determine the relationship between the degree of SNS use and optimism/pessimism measures in SNS users. As noted, previous psychological research has demonstrated that there is a positive correlation between the degree of SNS use and levels of depression, anxiety, drinking, and certain psychological states. When developing the OPI scale, Dember et al. (1989) found a link between pessimism and depression, anxiety, and physical health. Based on the purpose of this study and the findings in previous literature, it was posited that the OPI scale is appropriate for the current study.

Addressing Permission

To request permission to use this OPI scale, an email was sent to the developer of the instrument based on the information provided by Dember et al. (1989) in noting where to obtain a copy of the instrument (Appendix B). While waiting for a response, it was discovered that Dr. William Dember, the developer of the OPI, unfortunately passed away in 2006. The copyright of

his study and the OPI were investigated. After checking with the United States Copyright Office, it was determined that the instrument and related study were not copyrighted and that the instrument is available for open use. Based on this, it was determined that it was appropriate to use the instrument in this study without seeking further permission.

Published Reliability and Validity Values

The development of the OPI was a result of two studies conducted by Dember et al. (1989), who claimed that the new OPI may allow researchers to further investigate psychometric properties, and the instrument has been recommended for use by other investigators. In presenting the reliability and validity values of the instrument, Dember et al. reported that internal consistency (Cronbach's alpha) for optimism was .84 (Study I) and .83 (Study II), and for pessimism, .86 (Study I) and .88 (Study II), which they posited showed that a unitary dimension was being tapped by each scale. Test-retest reliability assessed at a time interval of two weeks was .75 for optimism and .84 for pessimism. Based on a separate scale for optimism and pessimism showing a low correlation, the researchers argued that the bipolarity of the two constructs was questionable. Dember et al. noted, however, that researchers have reliably endorsed optimistic and pessimistic statements at the same time and that optimism and pessimism are related differently to external criteria.

Dember et al. (1989) decided to create a separate instrument for each construct based on the premise that as a bipolar instrument, there were discrepancies between the canonical correlation and Cronbach's alpha values. They noted that while the canonical *r* was greater than the Pearson *r*, calculated at .74, it was lower than either of the Cronbach's alpha values of .84 and .83. If the dimensions of optimism and pessimism were bipolar, then one would expect the Cronbach's alpha to be lower than the canonical *r* value (Dember et al., 1989). Since the reverse

is true, Dember et al. presented separate instruments within the same questionnaire. The instrument used today contains 56 questions, with 18 measuring optimism and 18 measuring pessimism and 20 filler questions. Dember et al. (1989) found that the separate optimism and pessimism scales were reasonably reliable in terms of both internal consistency and test-retest reliability. They also posited that the scales can be used to show relationships with other measures that intend to tap into optimistic and pessimistic orientations.

Quality of Evidence

In the following sections, the quality of evidence will be expounded on as it relates to this study as a whole and the instrument used for the study. The specific elements discussed are validity, internal consistency, and reliability. In relation to the survey instrument, specifically the OPI scale, the face and construct validity as well as internal consistency and test-retest reliability will be presented. While there are other types of validity related to research studies, the elements discussed here are the most relevant to this study.

Validity

External Validity

According to Terrel (2016), external validity pertains to whether the results of a study are generalizable to other groups or situations outside of the sample. While the typical external threats to validity are not pertinent to this nonexperimental study, the selection of a purposive sample limits the generalizability of the results based on participants being 18+ years of age. Similarly, the sample population was limited to the United States. And finally, it was required that all participants are currently using SNSs. Given these constraints, the results are not generalizable to populations outside of what is found in the purposive sample.

Internal Validity

According to Terrel (2016), internal validity concerns extent to which the dependent variable is affected by the manipulation of the independent variables as opposed to the factors outside the scope of the study. Creswell and Creswell (2018) presented that threats to internal validity reside in experimental procedures, treatments, or experiences of the participants that threaten the researcher's ability to draw correct inferences from the data about the experiment population. An experimental study was not conducted here, and as such, no independent variables were manipulated. One internal threat that may have been valid in this nonexperimental study is the *threat of selection*, which occurs when participants have certain characteristics that predispose them to certain outcomes (Creswell & Creswell, 2018). To account for this threat, at least 400 participants with a wide array of demographic characteristics were recruited.

Face Validity

According to Goldbloom (2006), face validity relates to how a measure or procedure appears and whether or not, on a surface level, it represents the construct it is meant to measure. When first developing the OPI scale, Dember et al. (1989) sought to establish face validity of the instrument. To do so, they recruited seven graduate students at the University of Cincinnati to judge whether or not the items selected for the OPI scale were optimistic, pessimistic, or filler items. Of the initial 40 items, 36 were moved forward based on a 91.36% agreement. Of the 36 items chosen, 18 represented optimism, and 18 represented pessimism.

Construct Validity

After completing the initial OPI scale once face validity was established, Dember et al. (1989) sought to test the psychometric properties of the items relative to internal consistency and also examine construct validity. In the Instrumentation section that discusses the results of Study I, Dember et al. (1989) note that the instrument was more reliable when the OPI was a combined

score on a continuum with a coefficient alpha of .89 as opposed to two separate scores for optimism (.83) and pessimism (.86). The Pearson product-moment correlation was −.54 between optimism and pessimism scores. Thus, Dember et al. posited that while internal consistency was high, a low correlation between the two constructs demonstrated that they might not be bipolar. After adjusting the items on the scale and retesting, the results were similar, demonstrating that optimism and pessimism may need to be treated as separate constructs as opposed to bipolar constructs (Dember et al., 1989).

Reliability

Internal Consistency

Dember et al. (1989) conducted two studies when testing the validity and reliability of the OPI scale. Study I was an initial test, and Study II was a replicative test that also sought to examine correlations with other psychometric tests. The results of Study II were similar and consistent with Study I, and Dember et al. presented that a scatterplot of optimism and pessimism scores showed a linear relationship between both scales. The resulting Pearson product-moment correlation coefficient was −.57. Dember et al. posited that there was an "impressive" degree of consistency between data in Study I and II and that correlation was significantly lower based on Cronbach's alphas of .83 and .88 for optimism and pessimism, respectively. Finally, Dember et al. noted that the canonical correlation between optimism and pessimism scales of .74, while higher than a Pearson *r* of −.57., was lower than the two Cronbach's alpha values. As such, they concluded that the two constructs are not bipolar.

Test-Retest Reliability

When discussing the development of the OPI scale, Dember et al. (1989) claimed that the purpose of their study was not to determine test-retest reliability, but they noted that this topic

was addressed in another study. Dember and Brooks (1989, as cited by Dember et al., 1989) assessed the test-retest reliability of the OPI scale. The results of that study showed a test-retest reliability correlation of .75 for optimism and .84 for pessimism.

Data Collection Procedures

This study was conducted to determine the relationship between the degree of SNS use and mean OPI scores. To collect data, a cross-sectional survey questionnaire was placed on Qualtrics, which is an online tool for developing professional and academic surveys. The survey contained questions related to the amount of SNS use, the platforms used and demographics in addition to the OPI questions. This survey was linked to CloudResearch's Connect platform to acquire participants and conduct the survey. After applying to and receiving approval from the institutional review board (IRB), the survey was published on Connect and participants were allowed to take the survey if they met survey conditions and accepted the compensation set in the posting. CloudResearch's Connect is a well-known service that is often used by academic researchers for conducting surveys and collecting survey data. A goal of this study was to collect data from at least 400 participants.

When using Connect to collect survey data, researchers have two options. They could create the survey within Connect or link a survey from a third party, such as Qualtrics or SurveyMonkey. In the latter case, the Connect platform is primarily used to acquire participants for the study, and a third party is used for the actual survey instrument. The survey posting on Connect included the purpose of the study and any disclaimers to ensure that participants are fully aware of the data being collected and how it will be used. Participants were compensated $1.50 for taking the survey. The information collected was used to inform descriptive statistics to understand the basic distribution of the data and conduct correlational, regression, and path

analyses (via SEM and bootstrapping) to understand associations and relationships between variables to answer the research questions. The data was uploaded into Microsoft Excel and analyzed with StatPlus, SPSS, and SmartPLS4. These data collection procedures were supported by previous cultivation studies that used analytical surveys to collect data for determining the association and relationship between variables (Gerbner, 1970; Gerbner et al., 1980), especially when applied to SNS use (Hermann et al., 2020; McNallie et al., 2020).

Data Analysis Procedures

The next section will present the concept of descriptive statistics and their purpose in this study as it relates to the research questions. The section after that discusses the process of fitting the regression model and how it was developed based on the research questions and the variables involved in the study. Inferential statistics will also be discussed in relation to the assumptions around conducting multiple linear regression (MLR) to ensure statistical accuracy. Finally, stepwise linear regression (SLR), SPSS PROCESS, SmartPLS4 PLS-SEM, and the rationales for their use in this study will be explained.

Summary of Descriptive Statistics

According to Lee (2020), researchers use descriptive statistics to present information related to the characteristics and distribution of values in one or more data sets. From a classical perspective, descriptive statistics allow researchers to understand the distribution of data and when comparing data distributions and also the central tendency or degree of dispersion of values in these datasets (Lee, 2020). In this study, RQ1 pertains to the distribution of OPI scores based on the degree of SNS use, demographic characteristics, and other SNS-related characteristics (i.e., platform, content, and number of connections). These descriptive statistics are presented in tables in Chapter 4. Classic descriptive statistics may also include minimum,

maximum, range, mean, median, mode, standard deviation, variance, kurtosis, and skewness, which is also presented in Chapter 4.

Fitting the Regression Model

According to Render et al. (2012), regression analysis can be used to serve two distinct purposes: to understand the relationship between variables and to predict the value of one variable based on the other. In this study, both understanding the relationship and predicting how the degree of SNS use predicts levels of optimism and pessimism in users are under investigation. Render et al. (2012) noted that in any regression model, there is an implicit assumption that a relationship exists between the variables in the model and also that there will be random error that cannot be predicted. MLR, and more specifically, SLR was used in this study to conduct analyses. According to Render et al. (2012), MLR is a practical extension of simple linear regression and allows researchers to build a model with multiple independent variables. They presented the fundamental underlying model of MLR as

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k + \varepsilon$$

where

Y = dependent or response variable

X_i = *i*th independent variable, predictor variable, or explanatory variable

β_0 = intercept (i.e., value of Y when all $X_i = 0$)

β_I = coefficient of the *i*th independent variable

k = number of independent variables

ε = random error

According to Render et al. (2012), to estimate the value of the coefficients, a sample is acquired, and the following equation can be used:

$$\acute{Y} = b_0 + b_1X_1 + b_2X_2 + \ldots + b_kX_k$$

where

$\acute{Y}$ = predicted value of Y

b_0 = sample intercept (also an estimate of β_0)

b_i = sample coefficient of *i*th variable (also an estimate of β_i)

Based on the variables in this study, the research questions and hypotheses, and the objective of determining the relationship between the degree of SNS use and mean scores for optimism and pessimism from the OPI scale, the following models for multiple regression analyses were considered.

MLR Model 1

The first model represents the first part of RQ 2 and H1A, which addresses the relationship between the degree of SNS use without controls and the mean optimism score on the OPI scale. This model can be represented by the following:

$$Y_O = \text{Intercept} + B_1SNS_{hours} + B_2SNS_{Access} + B_3SNS_{Years} + \varepsilon$$

where

Y_O = mean score for optimism (dependent/response variable)

B_1SNS_{hours} = SNS hours per day used (independent/predictor variable)

B_2SNS_{Access} = SNS number of times accessed per day (independent/predictor variable)

B_3SNS_{Years} = SNS total years used (independent/predictor variable)

ε = random error

MLR Model 2

The second model represents the first part of RQ 2 and H1B, which addresses the relationship between the degree of SNS use without controls and the mean pessimism score on the OPI scale. This model can be represented by the following:

$$Y_P = \text{Intercept} + B_1SNS_{hours} + B_2SNS_{Access} + B_3SNS_{Years} + \varepsilon$$

where

Y_P = mean score for pessimism (dependent/response variable)

B_1SNS_{hours} = SNS hours per day used (independent/predictor variable)

B_2SNS_{Access} = SNS number of times accessed per day (independent/predictor variable)

B_3SNS_{Years} = SNS total years used (independent/predictor variable)

ε = random error

Controlling for Demographic and SNS Characteristics

MLR Model 3

The third model represents the second part of RQ 3 and H2A, which addresses the relationship between the degree of SNS use with controls and the mean optimism score on the OPI scale. This model can be represented by the following:

$$Y_O = \text{Intercept} + B_1SNS_{hours} + B_2SNS_{Access} + B_3SNS_{Years} + B_4DEMO_{Gender} + B_5DEMO_{Age}$$
$$B_6DEMO_{Education} + B_7DEMO_{Race} + B_8DEMO_{Marital} + B_9DEMO_{Employment} + B_{10}DEMO_{Income} + \varepsilon$$

where

Y_O = mean score for optimism (dependent/response variable)

B_1SNS_{hours} = SNS hours per day used (independent/predictor variable)

B_2SNS_{Access} = SNS number of times accessed per day (independent/predictor variable)

B_3SNS_{Years} = SNS total years used (independent/predictor variable)

B_4DEMO_{Gender} = gender (control variable)

B_5DEMO_{Age} = age (control variable)

$B_6DEMO_{Education}$ = educational level (control variable)

B_7DEMO_{Race} = race/ethnicity (control variable)

$B_8DEMO_{Marital}$ = marital status (control variable)

$B_9DEMO_{Employment}$ = employment (control variable)

$B_{10}DEMO_{Income}$ = household income (control variable)

ε = random error

MLR Model 4

The fourth model represents the second part of RQ 3 and H2B, which addresses the relationship between the degree of SNS use with controls and the mean score for pessimism on the OPI scale. This model can be represented by the following:

$$Y_P = \text{Intercept} + B_1SNS_{hours} + B_2SNS_{Access} + B_3SNS_{Years} + B_4DEMO_{Gender} + B_5DEMO_{Age}$$
$$B_6DEMO_{Education} + B_7DEMO_{Race} + B_8DEMO_{Marital} + B_9DEMO_{Employment} + B_{10}DEMO_{Income} + \varepsilon$$

where

Y_P = mean score for pessimism (dependent/response variable)

B_1SNS_{hours} = SNS hours per day used (independent/predictor variable)

B_2SNS_{Access} = SNS number of times accessed per day (independent/predictor variable)

B_3SNS_{Years} = SNS total years used (independent/predictor variable)

B_4DEMO_{Gender} = gender (control variable)

B_5DEMO_{Age} = age (control variable)

$B_6DEMO_{Education}$ = educational level (control variable)

B_7DEMO_{Race} = race/ethnicity (control variable)

$B_8DEMO_{Marital}$ = marital status (control variable)

$B_9DEMO_{Employment}$ = employment (control variable)

$B_{10}DEMO_{Income}$ = household income (control variable)

ε = random error

Moderation Analysis

According to Edwards (n.d.), moderation occurs when there is a change in the relationship between a predictor and response variable that is dependent on a third variable called the moderator variable. In this study, the predictor and response variables are continuous, while the moderator variables are polytomous or nominal categorical variables and rank order, which is treated as continuous for analysis. Edwards (n.d.) noted that moderation occurs when the slope of the relationship between the predictor and response variables varies between the groups representing the nominal moderator variable. According to Baron and Kenny (1986), a moderator is a qualitative or quantitative variable that affects the direction or strength of the relationship between a predictor and response variable. When considering correlational analysis in particular, Baron and Kenny noted that a moderator is a third variable that affects the zero-order correlation between two other variables.

Braitman (2010) pointed out that while moderation is another way of stating that there is an interaction between predictors, an interaction alone is not necessarily grounds for saying moderation is occurring. Braitman noted that there are specific situations in which an interaction should be described as moderation. The first situation is when the researcher is primarily interested in the relationship between one of the predictors in the interaction and the response variable. In the second case, the researcher uses the other predictor to describe this main

relationship more completely. And third is when the moderator is preexisting rather than manipulated, as in demographic variables, for example.

Moderation analysis can be carried out in a number of ways. One is through the use of regression analysis in SPSS. This is accomplished with the addition of a created variable that represents the linear or interaction term in MLR (Laerd, 2013). However, this is typically used in situations where there is at most a dichotomous moderator variable. In this study, the moderator variables are represented by polytomous categorical variables, and as such, a different method of analysis was needed. There are a number of analytical methods that can be used for complex variables, such as path analysis with SEM or PROCESS in SPSS, which allows for moderation analyses of multicategorical variables. For the sake of a parsimonious and clearer interpretation, PROCESS in SPSS was selected to conduct moderation analyses between the predictor and moderator terms, represented by platform type, content type, and number of connections.

Moderation With the SPSS PROCESS v4.3 Macro

Hayes (2023) is a professor at the University of Calgary who developed a macro application for use in SPSS called PROCESS. Hayes has described PROCESS as an "observed variable OLS and logistic regression path analysis modeling tool" (para. 1). According to Hayes, this tool is often used for estimating the direct and indirect effects in single and multiple mediator models, two- and three-way interactions in moderation models, including simple slopes and regions of significance, and conditional indirect effects for business, social, and health sciences.

Mediation Analysis

Braitman (2010) explained that mediation is a theory relating to the functioning of the primary relationship between the predictor and response variable. Baron and Kenny (1986)

posited that a variable functions as a mediator when it meets specific criteria, such as (a) differences in levels of the independent variable account for differences in the presumed mediator, with significance (known as path *a*); (b) differences in the mediator account for variations in the response variable, with significance (known as path *b*); and (c) when controlling for paths *a* and *b*, a previously significant relationship between them is no longer significant, and the strongest example of mediation is when path *c* is 0. Barron and Kenny (1986) noted that when path *c* is not 0, it may indicate that there are multiple mediators in effect, and as such, especially in the field of psychology, where social phenomena have many causes, it makes sense to seek multiple mediators that reduce path *c* instead of making it 0. Braitman (2010) offered that full mediation occurs when the direct effect is not statistically different from 0, while the indirect effect is. Related to Baron and Kenny (1986), when there is a single significant mediation effect, path *c* is equal to 0. On the other hand, when multiple mediators are in effect, this is known as partial mediating effects, which is when both the direct and indirect effects are not 0 (Braitman, 2010). Braitman noted that in this case, the mediator is acting on the relationship, which is seen in the significant indirect effect, but the predictor variable is still influencing the relationship, seen in the significant direct effect. When conducting mediation analyses, there are typically three steps involved, beginning with establishing the effect of interest, which is known as the total effect.

When the total effect is not significant, it typically means that there is no significant direct or indirect effect (Braitman, 2010). The next step involves determining the relationship between the predictor variable and the mediator, which is half of the indirect effect. The last step involves determining the relationship between the mediator and response variable, which is the other half of the indirect effect. The Sobel test is typically used for mediation analyses, and it

tests the magnitude of the indirect effect of the predictor on the response variable through the mediator. Keith (2019) argued that the Sobel test and its variations are not the best methods for testing mediation due to the normality of the underlying distribution, which can be questionable in large datasets. Keith also contended that the Sobel test has low power, which means that it may often suggest an indirect effect that is not statistically significant when it shouldn't. Keith discussed that more recent developments in research demonstrate that methodologists are now opting for bootstrapped standard errors, which is a method commonly used in SEM programs to determine the statistical significance of indirect effects. In the case of bootstrapping, standard errors are estimated through repeated random samples of existing data, which requires less assumptions about the normality of the distribution (Keith, 2019). It was determined that bootstrapping is an ideal method for mediation analysis in this study due to the use of polytomous categorical variables where the distribution is not normal. For the purpose of developing structural equation models for path analysis of the mediation effects of platform, content, and number of connections, SmartPLS4 was selected (Ringle et al., 2022).

Mediation Analyses With SmartPLS4

According to Ringle et al. (2022), SmartPLS4 is "a software application for the design of structural equation models (SEM) on a graphical user interface (GUI)." On this platform, the models can be measured using PLS analysis, which in the case of this study, consists of PLS-SEM.

Inferential Statistics

Laerd (2013) noted that when seeking to conduct multiple regression analyses, it is important to consider eight assumptions required for MLR before being appropriate for use.

These eight assumptions and how they have been addressed are presented in the following sections.

Assumption I: Response Variable

The first assumption that must be tested in order to consider an MLR model for use is that the response variable is measured on a continuous scale (Laerd, 2013). In order for a variable to be continuous, it must be measured on a ratio or interval scale. While the response to each question on the OPI scale used in this study is ordinal, research has shown that when two or more ordinal variables are used to sum responses or calculate a mean, they can be treated as continuous variables (Norman, 2010; Zumbo & Zimmerman, 1993). In this study, mean optimism and pessimism scores were calculated based on the average of 18 ordinal questions for each construct on the OPI scale. As such, the response variables (i.e., mean scores for optimism and pessimism) were treated as continuous.

Assumption II: Predictor Variables

According to Laerd (2013), the second assumption for MLR is that there must be two or more independent or predictor variables, which can be categorical or continuous. This study has three continuous predictor variables and a number of different categorical control variables, which were presented in the previous section. As such, this assumption is verified.

Assumption III: Independence of Observations

The third assumption of MLR as presented by Laerd (2013) is that there is independence of observations, also known as independence of residuals, which can be tested by calculating the Durbin-Watson statistic. The independence of residuals was tested for once the data was collected. This will be discussed in Chapter 4.

Assumption IV: Linearity

For Laerd (2013), the fourth assumption for MLR is that there must be a linear relationship between the response and predictor variables both individually and collectively. Laerd noted that scatter plots and partial regression plots can be utilized for this purpose. Linear relationships were checked once the data was collected in this study, and this will be discussed further in Chapter 4.

Assumption V: Homoscedasticity

The fifth assumption for MLR is that the data must show homoscedasticity, which Laerd (2013) defines as when the variances along a line of best fit stay similar as one moves along the line. Laerd noted that in order to analyze the data, a researcher will need to plot the studentized residuals against the unstandardized predicted residuals. This plot is presented in Chapter 4.

Assumption VI: Multicollinearity

The sixth assumption for MLR is that the data must not show multicollinearity, which Render et al. (2012) defines as when a variable is correlated to other variables. Laerd (2013) maintained that when multicollinearity is present, it can lead to issues with understanding which predictor variable contributes to variance explained in the response variable. In order to test for multicollinearity, correlation coefficients and tolerance/VIF values for this study were inspected to ensure that multicollinearity is not present. The results of this will be presented in Chapter 4.

Assumption VII: Outliers

The seventh MLR assumption is that there should not be any major outliers, highly influential points, or high leverage points (Laerd, 2013). The interquartile (IQR) method was used to address any outliers in the dataset once the data was collected.

Assumption VIII: Normality

The final assumption for MLR is that the residuals (also known as errors) are approximately normally distributed (Laerd, 2013). Laerd discussed two methods for checking normality: a histogram with a superimposed normal curve and normal P-P plot and a normal Q-Q plot of Studentized residuals. Both methods were used and tested for normality once the data was collected and will be presented in Chapter 4.

Predicted Stepwise Multiple Linear Regression Analysis

The following sections detail the rationale for selecting stepwise linear regression in determining the relationship between the predictor variables and response variables as well as testing the significance of the relationships. Additional tests and output data are presented that were used to determine the statistical significance of the model and the variance explained by predictor variables and controls.

Rationale

According to Render et al. (2012), when building a robust regression model, one identifies possible independent variables, and the best ones are then used for the model. Render et al. held that the best model is a statistically significant one with a high R^2 and a few variables. Given this, the rationale behind using stepwise linear regression is that it is an automated process by which independent variables are systematically added to or deleted from a regression model. In this study, a forward stepwise procedure puts the most significant variable in the model first and then adds the next variable that will improve the model the most, as the first variable is already in the model.

Partial Coefficients

Partial coefficients are reported in Chapter 4, which Dougall (1995) noted provide information related to the independent contribution of each of the predictor variables, showing how they may be intercorrelated with each other to the result of Y (response variable).

Coefficient of Determination

When conducting regression analysis, the resultant statistics include the coefficient of determination, which is the proportion of variability in the response variable (Y) that is explained by the regression equation. This is typically presented as R^2 (Render et al., 2012). This statistic will be reported in Chapter 4.

Coefficient of Correlation

Render et al. (2012) explained that another measure related to the coefficient of determination is the coefficient of correlation, which expresses the degree of strength of the linear relationship and is represented as *R*. This measure will be reported in Chapter 4.

ANOVA (F-Test)

When testing a model for significance, it is important for researchers to conduct an *F*-test, which is used to determine whether there is a relationship between the predictor variables and response variables (i.e., X and Y, respectively). One method of conducting an *F*-test is using ANOVA, which provides the observed significance level, or *p*-value, for the calculated *F* value (Render et al., 2012). An ANOVA was conducted data collection to test the models for significance. The relevant figures will be reported in Chapter 4.

R^2 and Adjusted R^2

It was noted above that a good model is one that is statistically significant with a high coefficient of determination (R^2). According to Render et al. (2012), as more variables are added

to a regression model, the coefficient of determination usually increases and cannot decrease, and while researchers may try to add more variables in an attempt to increase R^2, too many independent variables can result in further issues. Thus, it is recommended for researchers to use the adjusted R^2 to determine whether an additional independent variable is beneficial. Render et al. (2012) noted that the adjusted R^2 considers the number of predictor variables in the model, and it is possible for the adjusted R^2 to decrease. Dougall (1995) suggested that adjusted R^2 can be computed to protect against too many predictor variables that have little theoretical significance to the model. Further, he claimed that when comparing R^2 to adjusted R^2, if there were significant decreases from R^2 to adjusted R^2, then the original R^2 may have been artificially inflated by the addition of extra variables. This supports the use of forward stepwise linear regression, especially as it pertains to models with a high number of controls, as this method automatically accounts for insignificant variables.

Durbin-Watson

According to Dougall (1995), the Durbin-Watson test can be used as a part of stepwise multiple regression to determine whether there is a pattern of serial dependence in the residuals. Laerd (2013) noted that the Durbin-Watson statistic is typically a number between 0 and 4, and if the number is between the two critical values of 1.5 and 2.5, then no first-order linear autocorrelation is present in the serial data. This statistic will be reported in Chapter 4.

Ethical Procedures

As Terrel (2016) claimed, it is important to be ethical when conducting research with human participants. After an investigation by the Belmont Committee, a U.S. government-created panel for investigating ethical research, The Belmont Report was published in 1979, mandating three main principles for conducting research using human participants. These three

principles are beneficence, respect for persons, and justice (Terrel, 2016). Further, three specific areas of focus in relation to these main principles are informed consent, assessment of risks and benefits, and selection of subjects (Terrel, 2016). Terrel explained that beneficence is when participants in a research study are treated ethically by respecting their decisions, protecting them from harm, and ensuring their well-being. Respect for persons pertains to treating individuals with respect in relation to being capable of making their own decisions affecting their well-being and protecting individuals who are not able to act autonomously (Terrel, 2016). Finally, Terrel said that justice relates to how the participants in the study should receive all entitled benefits without unduly imposed burdens.

Regarding the three specific areas of focus relating to the three main principles, informed consent pertains to ensuring participants are made aware of the purpose of the study and that they understand their rights as participants. Often, participants must provide written acknowledgment of agreement or accept an agreement to participate in a study (Terrel, 2016). Terrel further advised that researchers must make all attempts and care in investigating the nature and scope of risks and benefits inherent in a study. Terrel noted that this helps institutions in determining whether the risks to participants have been minimized and are justifiable, and it further allows for providing the necessary information to prospective participants considering participating in a study. Finally, Terrel claimed researchers must follow fair procedures for identifying and selecting participants, noting that participants should not be included or excluded based on reasons of risk or reward. In the following sections, these principles and areas of focus will be addressed as it relates to the treatment of human participants and the treatment of data.

Treatment of Human Participants

In order to conduct research with human participants, IRB approval is required at Liberty University. The resulting application approval is in Appendix D. Informed consent was obtained before the participants were able to take the survey. Because this research used Connect to hire workers (participants) to take the survey, it is important that the thorough nature and scope of the study was presented to the participants before they were able agree to the study. Further, participants were required to meet specific conditions, such as being 18+ years of age, users of SNS, and located within the United States. Participants were compensated fairly based on the number of questions within the study. Before participants were able to begin, they could view the compensation amount for the survey, and were thus able to decide for themselves if the compensation was fair. Assuming that some participants might be unable to deduce what fair compensation is, compensation was decided based on market research to ensure that at-risk participants were protected.

Treatment of Data

Participants were assured that data collected from the survey will remain confidential and anonymous and will not be used to identify any individual. Data collected was stored on an encrypted flash drive to ensure that it could not be accessed while not in use.

Summary

In this chapter, the purpose of the study was reiterated along with the research questions and hypotheses. The research method and design were presented as well as the rationale for choosing them. The quality of evidence was reviewed, including threats to the validity and reliability of the study and instrument used. The population and instrument were thoroughly explained and examined, and the data collection and analysis procedures presented. This chapter

concluded by discussing ethical procedures, which included the treatment of human participants and the treatment of data collected. In Chapter 4, the results will be presented followed by a summary of the hypotheses.

Chapter 4: Results

Overview

The findings from the data analyses and collection procedures presented in Chapter 3 will be presented in this chapter and are supported by tables and graphs. The purpose of this study was to determine the relationship between degree of SNS use OPI scores. A further purpose was to go beyond just understanding the impact of degree of SNS use on OPI mean scores to determine how main platform used, main content viewed, and number of connections on SNSs moderate and/or mediate this relationship. It was presented in previous chapters that a number of studies have been conducted in which degree of SNS use was used as a predictor for determining the impact on a number of different types of response variables, such as depression, fear of crime, perceptions of diversity, perceptions of self-efficacy in academia, and perceptions of trust in society. Much of the research presented showed a negative association between the degree of SNS use and psychological traits such as depression, indicating that depressive symptoms increase along with SNS use. Another study found that increased SNS use resulted in more positive perceptions of society or trust in society, which was premised on the idea that increased SNS use was priming users with social connection.

While some studies have looked at the conditional effects between platforms and content on SNSs, no studies have examined the moderating and mediating effects of how type of platform, content, or number of connections interact with the relationship between degree of SNS use and OPI mean scores. This investigation can provide an indication of how SNS use contributes more to a positive or negative psychological disposition. Further, by determining the moderating and mediating effects of platform, content, and number of connections on the relationship between degree of SNS use and optimism/pessimism mean scores from the OPI, this

study contributes meaningful findings to the greater body of cultivation literature by providing insight on this recently developed area of cultivation studies.

In the following sections, the research questions and hypotheses will be presented followed by a test of the assumptions of the MLR models presented in Chapter 3 via inferential statistics. Descriptive statistics will then be presented followed by a thorough interpretation of hypothesis testing using stepwise multiple linear regression for H1 and H2, ANOVA and hierarchical regression for H3 and H4, mediation analysis via SPSS v29 PROCESS Hayes macro for H5, moderation analyses using SmartPLS4 PLS-SEM for H6, and a review of the conditional effects of platform, content, and connections, concluding with a summary of the hypothesis tests.

Research Questions

This study was led by six main research questions (RQs).

RQ 1. How are OPI optimism and pessimism mean scores distributed based on the degree of SNS use and different demographic and SNS characteristics?

RQ 2. What is the relationship between the degree of SNS use and OPI scale optimism and pessimism mean scores when not controlling and controlling for demographic characteristics?

RQ 3. When controlling for demographics, does the degree of SNS use have a greater effect on optimism or pessimism?

RQ 4. What are the moderating effects of the primary SNS platform used, primary SNS content viewed, and number of SNS connections on the relationship between the degree of SNS use and OPI optimism and pessimism scores?

RQ 5. What are the mediating effects of the primary SNS platform used, primary SNS content viewed, and the number of SNS connections on the relationship between the degree of SNS use and OPI optimism and pessimism scores?

RQ 6. What are the conditional effects of main SNS platform, type of SNS content viewed, and number of SNS connections in predicting optimism and pessimism based on degree of SNS use?

Hypotheses

Hypothesis 1A (RQ 2)

***H*01.** There is no statistically significant relationship between the degree of SNS use and OPI scale mean optimism scores when not controlling for demographic characteristics.

***H*a1.** There is a statistically significant relationship between the degree of SNS use and OPI scale mean optimism scores when not controlling for demographic characteristics.

Hypothesis 1B (RQ 2)

***H*01.** There is no statistically significant relationship between the degree of SNS use and OPI scale mean pessimism scores when not controlling for demographic characteristics.

***H*a1.** There is a statistically significant relationship between the degree of SNS use and OPI scale mean pessimism scores when not controlling for demographic characteristics.

Hypothesis 2A (RQ 2)

***H*01.** There is no statistically significant relationship between the degree of SNS use and OPI scale mean optimism scores when controlling for demographic characteristics.

***H*a1.** There is a statistically significant relationship between the degree of SNS use and OPI scale mean optimism scores when controlling for demographic characteristics.

Hypothesis 2B (RQ 2)

***H*01.** There is no statistically significant relationship between the degree of SNS use and OPI scale mean pessimism scores when controlling for demographic characteristics.

***H*a1.** There is a statistically significant relationship between the degree of SNS use and OPI scale mean pessimism scores when controlling for demographic characteristics.

Hypothesis 3A (RQ 4)

***H*01.** There is no statistically significant moderation between primary SNS platform used on the relationship between the degree of SNS use and optimism mean scores.

***H*a1.** There is a statistically significant moderation between primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 3B (RQ 4)

***H*01.** There is no statistically significant moderation between primary SNS content viewed on the relationship between the degree of SNS use and optimism mean scores.

***H*a1.** There is a statistically significant moderation between primary SNS content viewed on the relationship between the degree of SNS use and optimism mean scores.

Hypothesis 3C (RQ 4)

***H*01.** There is no statistically significant moderation between the number of SNS connections on the relationship between the degree of SNS use and optimism mean scores.

***H*a1.** There is a statistically significant moderation between the number of SNS connections on the relationship between the degree of SNS use and optimism mean scores.

Hypothesis 4A (RQ 4)

***H*01.** There is no statistically significant moderation between primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1.** There is a statistically significant moderation between primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 4B (RQ 4)

***H*01.** There is no statistically significant moderation between primary SNS content viewed on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1.** There is a statistically significant moderation between primary SNS content viewed on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 4C (RQ 4)

***H*01.** There is no statistically significant moderation between the number of SNS connections on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1.** There is a statistically significant moderation between the number of SNS connections on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 5A (RQ 5)

***H*01.** There is no statistically significant mediation between primary SNS platform used on the relationship between the degree of SNS use and optimism mean scores.

***H*a1.** There is a statistically significant mediation between primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 5B (RQ 5)

***H*01.** There is no statistically significant mediation between primary SNS content viewed on the relationship between the degree of SNS use and optimism mean scores.

***H*a1.** There is a statistically significant mediation between primary SNS content viewed on the relationship between the degree of SNS use and optimism mean scores.

Hypothesis 5C (RQ 5)

***H*01.** There is no statistically significant mediation between the number of SNS connections on the relationship between the degree of SNS use and optimism mean scores.

***H*a1.** There is a statistically significant mediation between the number of SNS connections on the relationship between the degree of SNS use and optimism mean scores.

Hypothesis 6A (RQ 5)

***H*01.** There is no statistically significant mediation between primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1.** There is a statistically significant mediation between primary SNS platform used on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 6B (RQ 5)

***H*01.** There is no statistically significant mediation between primary SNS content viewed on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1.** There is a statistically significant mediation between primary SNS content viewed on the relationship between the degree of SNS use and pessimism mean scores.

Hypothesis 6C (RQ 5)

***H*01.** There is no statistically significant mediation between the number of SNS connections on the relationship between the degree of SNS use and pessimism mean scores.

***H*a1.** There is a statistically significant mediation between the number of SNS connections on the relationship between the degree of SNS use and pessimism mean scores.

Inferential Statistics: MLR Assumptions Tested

Outliers

The first step in preparing the data involved inspecting the completeness of each participant's survey (initially at $N = 529$). For a survey to be included in this study, it needed to be 100% complete. After the removal of incomplete surveys, there were 513 remaining surveys. At this point, a box plot was created in Excel using the StatPlus plugin to determine the mild and extreme outliers for all independent and dependent variables. Using the upper and lower whiskers as points of reference for removing the outliers under each variable using conditional formatting to locate these outliers in their respective columns, 418 surveys remained.

Figure 1

Boxplot of Uncleaned Data

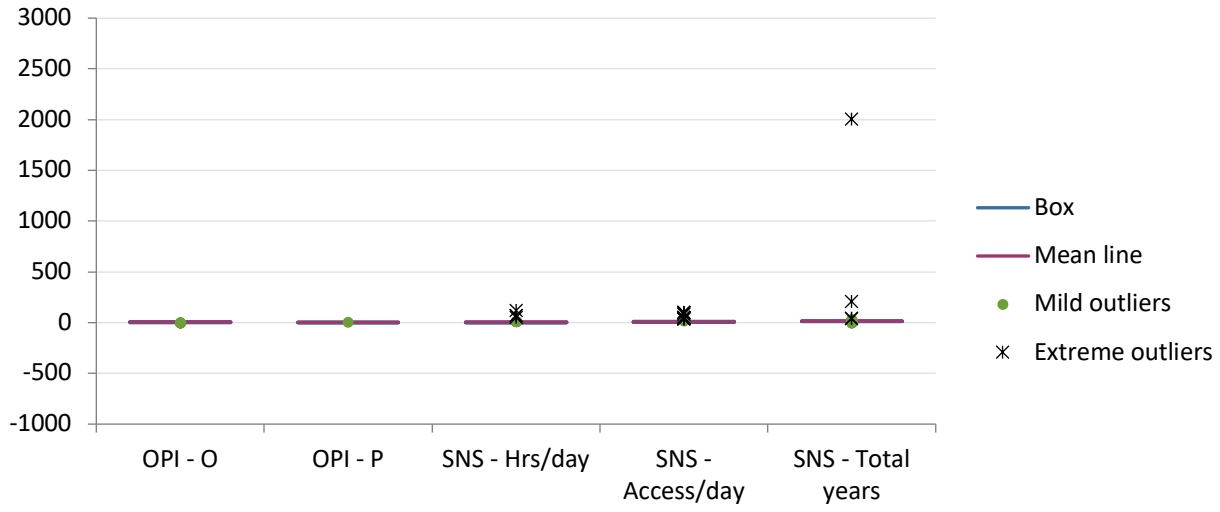


Table 1

Distribution of Uncleaned Data

Variable	*N*	*M*	Min.	Lower whisker	Q1	*Mdn*	Q3	Upper whisker	Max.
OPI-O	513	2.79	1.22	1.61	2.50	2.83	3.11	4.00	4.00

Variable	*N*	*M*	Min.	Lower whisker	Q1	*Mdn*	Q3	Upper whisker	Max.
OPI-P	513	2.35	1.22	1.22	2.06	2.33	2.72	3.67	3.78
SNS hr/day	513	3.32	0.00	0.00	1.00	2.00	4.00	8.00	120.00
SNS access/day	513	8.86	0.00	0.00	3.00	5.00	10.00	20.00	100.00
SNS total years	513	17.02	1.00	3.00	10.00	13.00	15.00	22.00	2007.00

Upon further inspection of the data, after running boxplots again and examining the distribution, it was determined that there were still erroneous entries that were invalid based on the question and requirements for participation in the study. For example, there were a few instances where participants entered “0” (see Table 1) as the number of hours per day on average they use SNS or number of times per day on average they access SNS, which is not possible if one is actively using SNS. As a result, these entries were removed, and the remaining number of participants was 414. Starting with 529 total responses, the initial completion rate was 96.98%. Considering the final result of completed and valid surveys, the completion rate was 78.26%. The final result of $N = 414$ participants with completed and valid surveys was above the required sample size of $N = 400$ for ensuring 95% confidence that the true value of the estimate will be with 5 percentage points of 0.5 for a population over 100,000 (CloudResearch, 2023). Figure 2 and Table 2 show the resulting box plot and distribution of the data following the removal of outliers based on the IQR method.

Figure 2

Boxplot of Cleaned Data

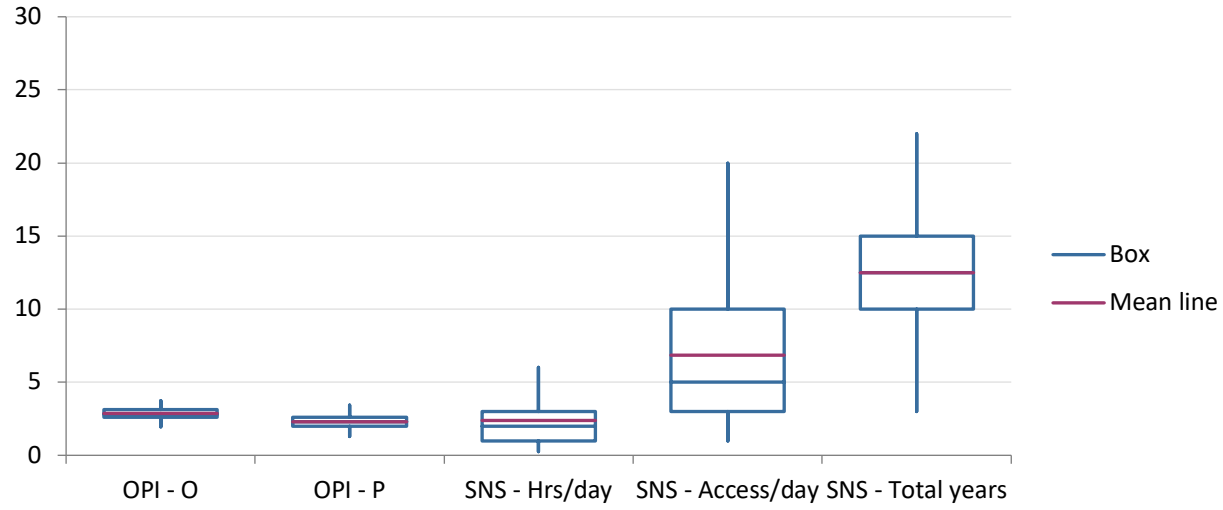


Table 2

Distribution of Cleaned Data

Variable	*N*	*M*	Min.	Lower whisker	Q1	*Mdn*	Q3	Upper whisker	Max.
OPI-O	414	2.84	1.94	1.94	2.61	2.83	3.11	3.72	3.72
OPI-P	414	2.29	1.28	1.28	2.00	2.28	2.61	3.44	3.44
SNS hr/day	414	2.37	0.25	0.25	1.00	2.00	3.00	6.00	6.00
SNS access/day	414	6.84	1.00	1.00	3.00	5.00	10.00	20.00	20.00
SNS total years	414	12.49	3.00	3.00	10.00	12.50	15.00	22.00	22.00

Autocorrelation

Table 3 presents a summary of two separate multiple linear regression (MLR) models for the two response variables, OPI-O (optimism mean scores from the OPI) and OPI-P (pessimism mean scores from the OPI). Dougall (1995) noted that the Durbin-Watson statistic is often used for detecting a pattern of serial dependence in an MLR's residuals, which is often a standard

metric in MLR model summaries. Model 1 in Table 3 shows the MLR model summary for the three predictor variables and optimism mean scores represented by OPI-O. The resulting Durbin-Watson statistic is 1.873, which according to Laerd (2013) falls between the two critical values of 1.5 and 2.5, and as such, it was determined that Model 1 does not demonstrate first-order autocorrelation in the serial data. Model 2 in Table 3 shows the MLR summary for the three predictor variables in the study and the response variable for pessimism mean scores on the OPI, represented by OPI-P. The resulting Durbin-Watson statistic for Model 2 is 1.970 (see Table 3), which also demonstrates that there was no first-order autocorrelation in the serial data. As such, the two MLR models passed the assumption of independence of observations.

Table 3

MLR Model Summary[a]

Model	*R*	R^2	Adjusted R^2	Estimate *SE*	R^2 change	*F* change	*df1*	*df2*	Sig. *F* change	Durbin-Watson
1[b]	.172[a]	.030	.022	0.37153	.030	4.168	3	410	.006	1.873
2[c]	.159[a]	.025	.018	0.43999	.025	3.550	3	410	.015	1.970

[a] Predictors: (constant), SNS total years, SNS hr/day, SNS access/day. [b] Dependent variable: OPI-O. [c] Dependent variable: OPI-P.

Linearity

It was noted that when determining whether or not an MLR can be used as an acceptable method for a study depends on the assumption that the predictor and response variables have a linear relationship both individually and collectively (Laerd, 2013). According to Laerd (2013), when testing for the assumption of linearity, a researcher must conduct the analysis in two parts, examining whether (a) a collective linear relationship exists between the predictor and response variables and (b) a separate relationship exists between each individual predictor variable. To determine the collective relationships between the predictor variables and each separate

dependent variable, the scatterplots of the Studentized residuals were analyzed in Figures 3 and 4, and it was determined based on the horizontal band in each that a linear relationship is likely. Similarly, an analysis of the separate relationships using the partial regression plots in Figures 5–10 also found a horizontal band, which supported the assumption of linearity.

Figure 3

OPI-O Studentized vs. Predicted Residuals

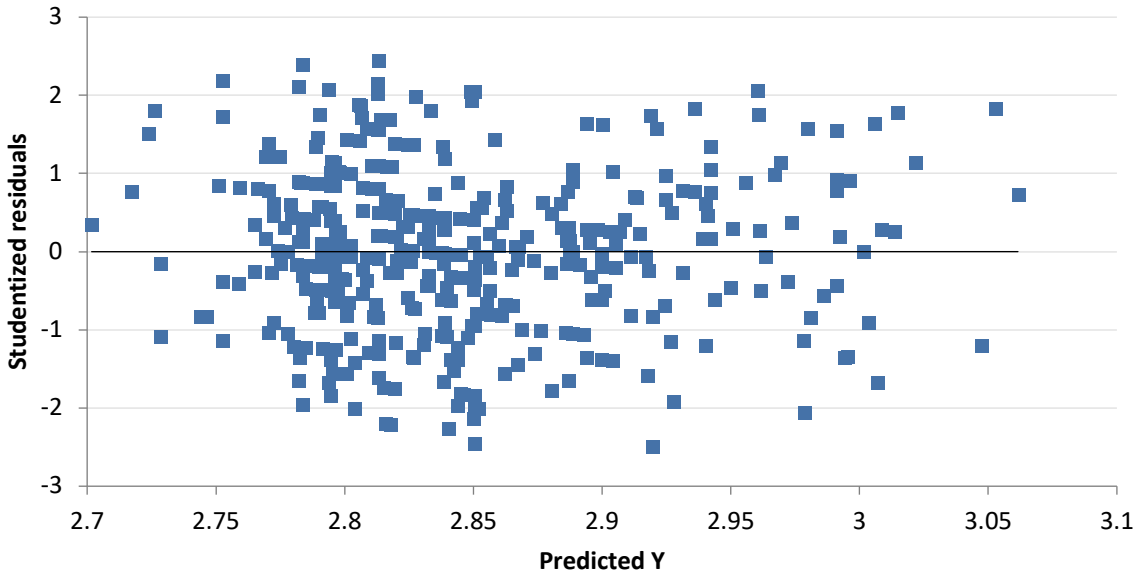


Figure 4

OPI-P Studentized vs. Predicted Residuals

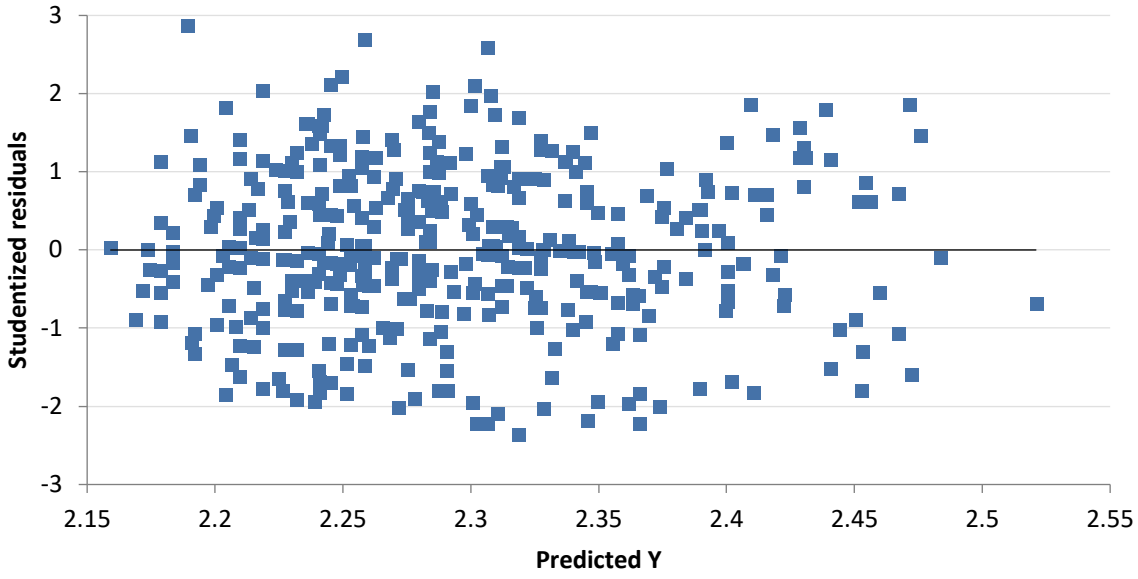


Figure 5

SNS Hr/Day and OPI-O Partial Regression Plot

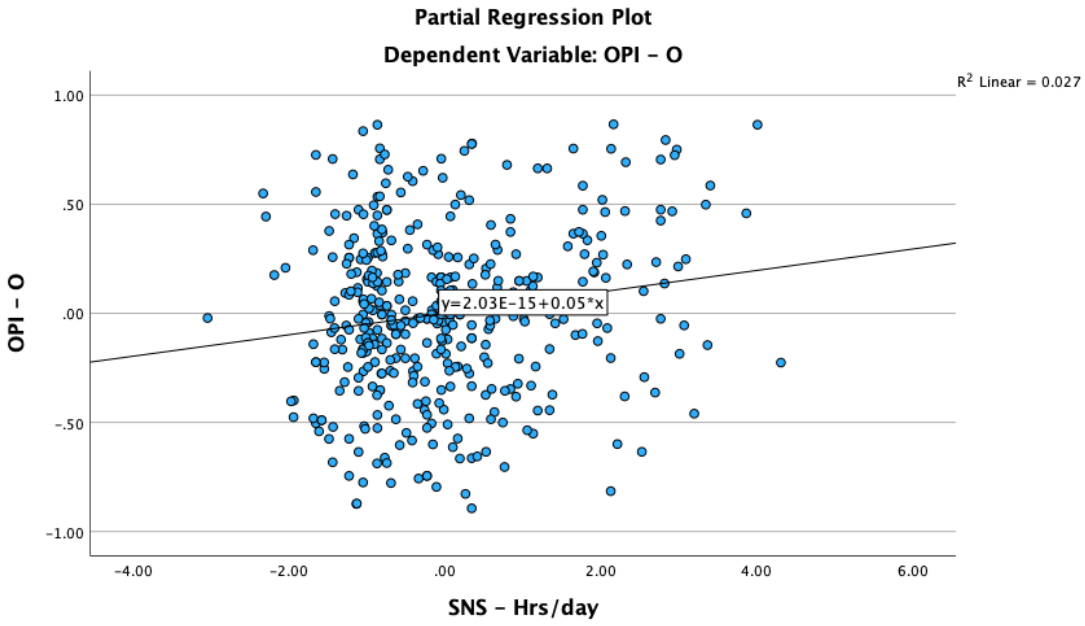


Figure 6

SNS Access/Day and OPI-O Partial Regression Plot

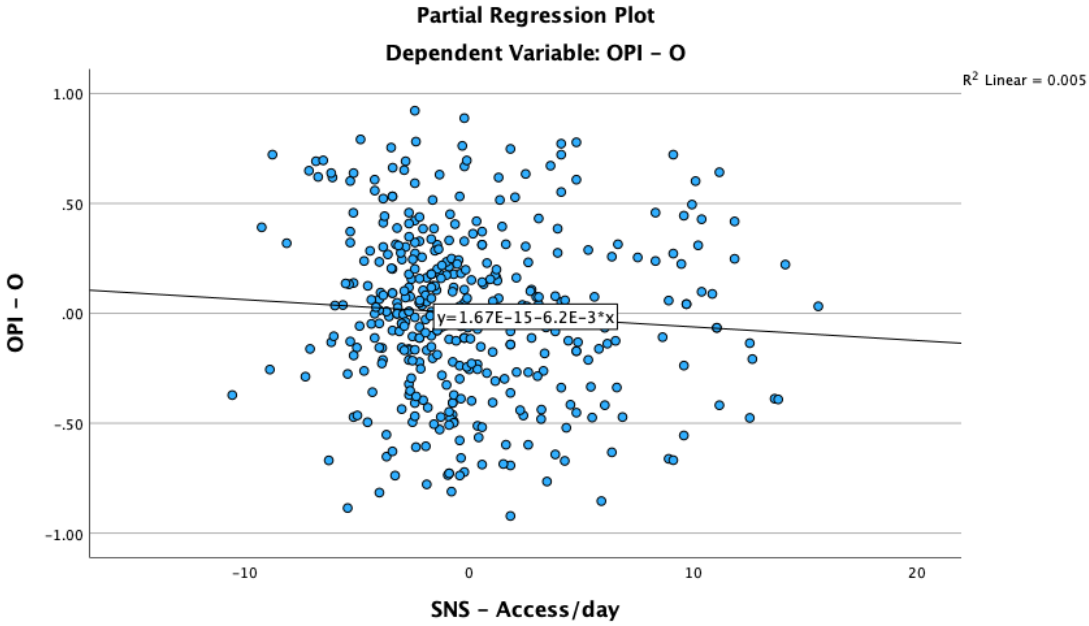


Figure 7

SNS Total Years and OPI-O Partial Regression Plot

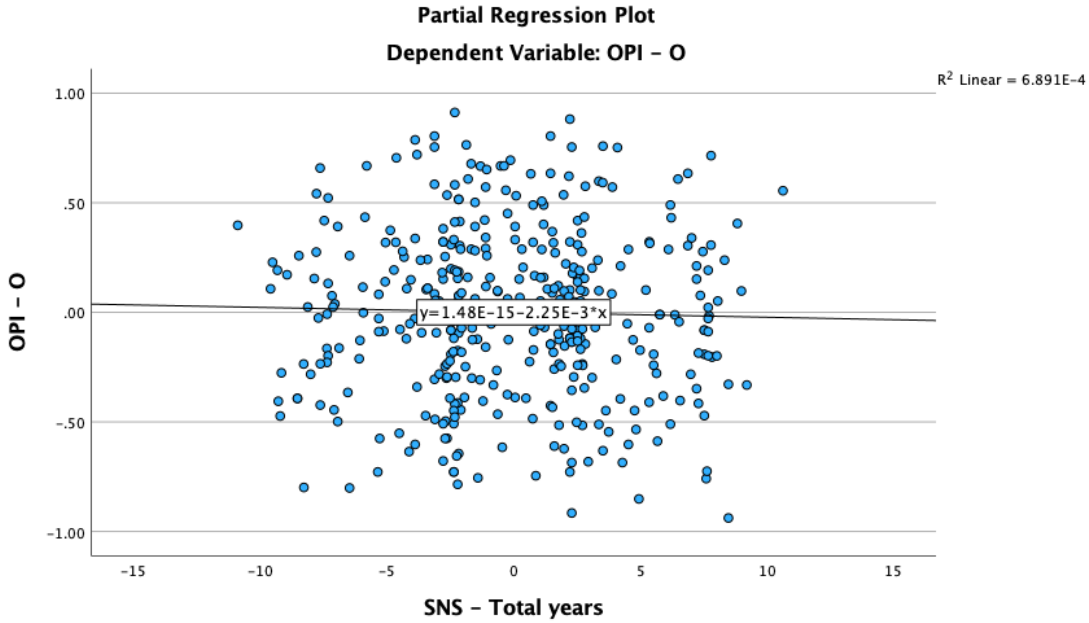


Figure 8

SNS Hr/Day and OPI-P Partial Regression Plot

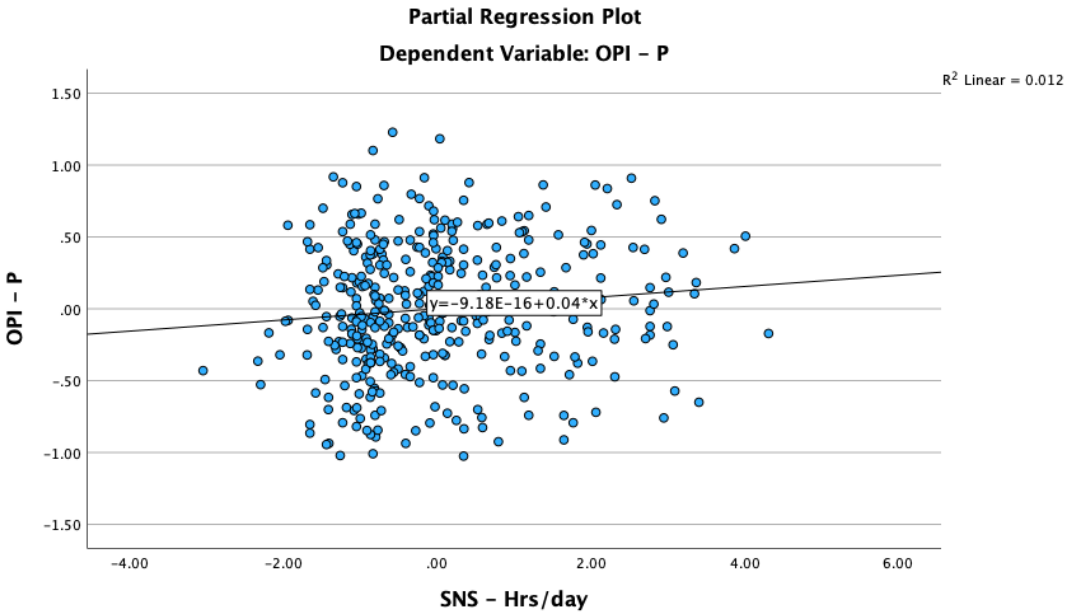


Figure 9

SNS Access/Day and OPI-P Partial Regression Plot

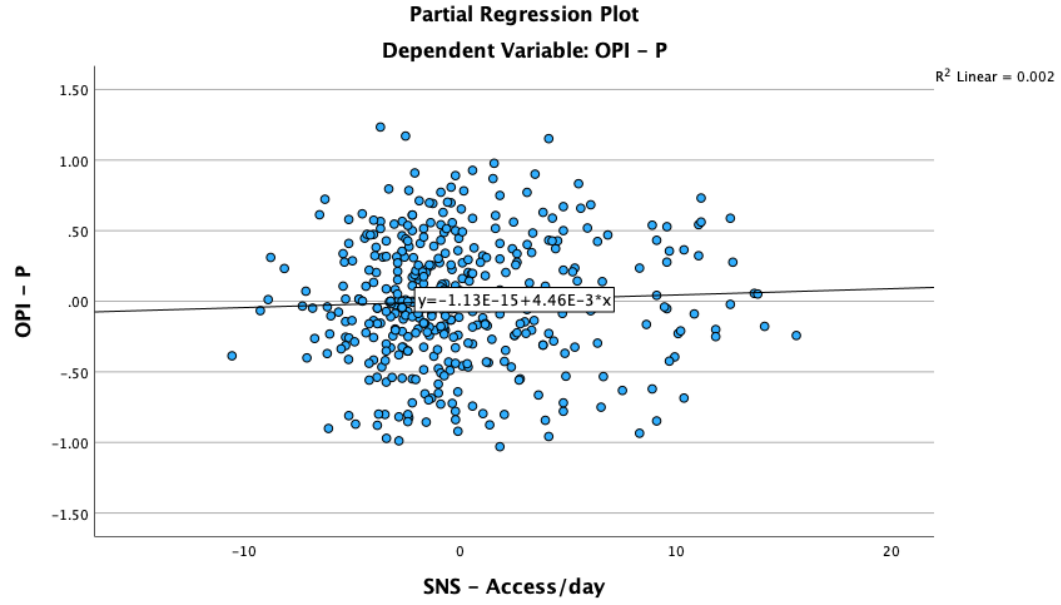
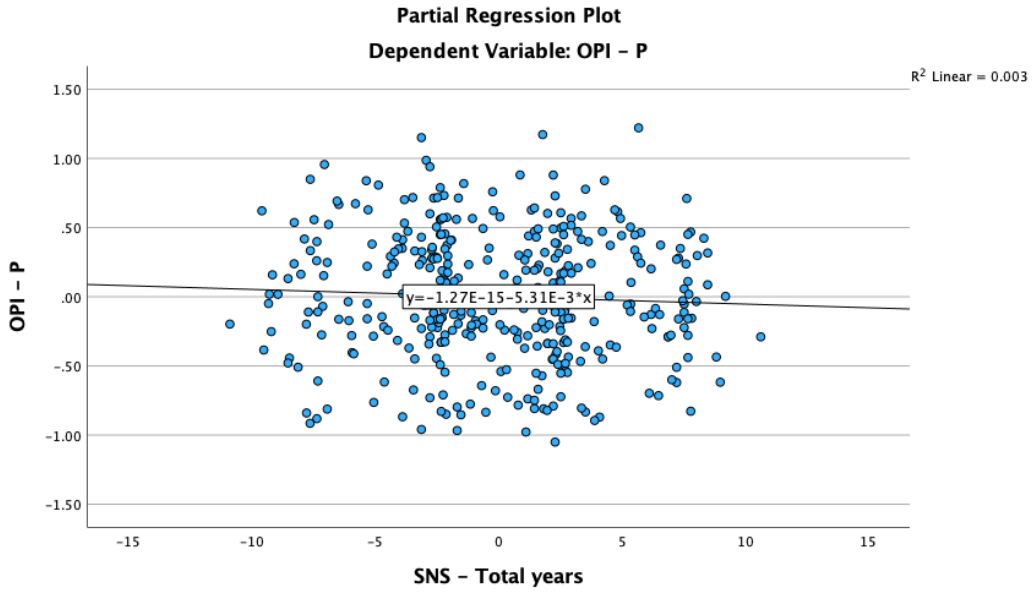


Figure 10

SNS Access/Day and OPI-P Partial Regression Plot



Homoscedasticity

It was presented in Chapter 3 that one of the necessary assumptions of MLR is the homoscedasticity of the residuals. Laerd (2013) defined homoscedasticity as when the variances along the fit line remain similar for the entire line. One way of testing for homoscedasticity is through the analysis of a plot of Studentized residuals against the unstandardized predicted residuals. Based on an analysis of Figure 3 and Figure 4 above, which represent optimism and pessimism scores, respectively, one can observe that the spread of the residuals does not increase or decrease while moving across the predicted values. To confirm this observation, a heteroscedasticity test, known as the Breusch-Pagan-Godfrey (BPG), test was conducted. Based on the results of the BPG test, both response variables had *p*-values above .05, and as such, the null hypothesis cannot be rejected. That is, $p > .05$ demonstrated that there is homogeneity of variance, and the assumption had been met.

Table 4

Breusch-Pagan-Godfrey (BPG) Test

Dependent variable						
OPI-O	Test statistic	0.85666	*p*	.83587	H0 (5%)	Cannot reject
	F	0.28338	*p*	.83740		
OPI-P	Test statistic	1.82326	*p*	.60989	H0 (5%)	Cannot reject
	F	0.60454	*p*	.61236		

Multicollinearity

Multicollinearity is present when a variable is highly correlated with other variables in the model. The issue with this is that it can lead to complications in determining which independent variable is contributing to the variance in the dependent variable. When testing for multicollinearity, one can conduct two specific tests, which involve the inspection of correlation coefficients and tolerance/VIF values, as shown in Table 5 and Table 6, respectively.

Table 5

Correlations (Pairwise Deletion)[ab]

R	OPI-O	OPI-P	SNS hr/day	SNS access/day	SNS total years
OPI-O	1.00000				
p (two-tailed)					
OPI-P	**−.54370**	1.00000			
p (two-tailed)	.00000				
SNS hr/day	**.15128**	**.14592**	1.00000		
p (two-tailed)	.00202	.00292			

R	OPI-O	OPI-P	SNS hr/day	SNS access/day	SNS total years
SNS access/day	−.00868	.09342	**.41101**	1.00000	
p (two-tailed)	.86019	.05753	.00000		
SNS total years	−.04719	−.05459	0.06356	**.11548**	1.00000
p (two-tailed)	.33815	.26781	.19680	.01875	

[a] Correlations in bold are significant at the 5% level (two-tailed). [b] *N* of valid cases = 414.

Laerd (2013) noted that when checking correlations in the correlation's matrix, it is important to identify any correlation higher than .7. When inspecting the correlations in Table 5, a significant correlation was identified between OPI-O and OPI-P of −.54, which is below the cutoff of 0.7. Further, there was a moderate and significant correlation between SNS access/day and SNS hr/day of .41, which is also below the cutoff. The collinearity statistics from the SPSS v29 output in Table 6 will be inspected next.

Table 6

Partial Correlations and Collinearity Statistics

Model		Partial correlations			Collinearity statistics	
	Variable	Zero order	Partial	Part	Tolerance	VIF
1[a]	SNS hr/day	.151	.166	.165	.819	1.222
	SNS access/day	−.009	−.074	−.073	.811	1.233
	SNS total years	−.047	−.026	−.026	.972	1.029
2[b]	SNS hr/day	.146	.111	.111	.819	1.222
	SNS access/day	.093	.045	.044	.811	1.233
	SNS total years	−.055	−.052	−.052	.972	1.029

[a] Dependent variable: OPI-O. [b] Dependent variable: OPI-P.

When inspecting the collinearity statistics, it is important to ensure that no variables have a tolerance value of less than 0.1, which results in a VIF of greater than 10 (Laerd, 2013). When this occurs collinearity statistics, it is a likely indication of a collinearity issue. Based on the results in Table 6, it was determined that there were no tolerance values below 0.1 and no VIF values above 10. As such, it was posited that there were no collinearity issues present in the model and the assumption had been met.

Normality

To test the assumption of normality, the residuals (also called errors) were checked to ensure they were approximately normally distributed. Laerd (2013) offered that normality can be checked by inspecting a histogram with a superimposed normal curve and a P-P plot. Another method is to check a normal Q-Q plot of Studentized residuals. For the purpose of parsimony, both methods are presented along with a series of normality tests, including Shapiro-Wilk W, Jarque-Bera, and D'Agostino kurtosis shown in Table 7.

Figure 11

Normal Curve Histograms

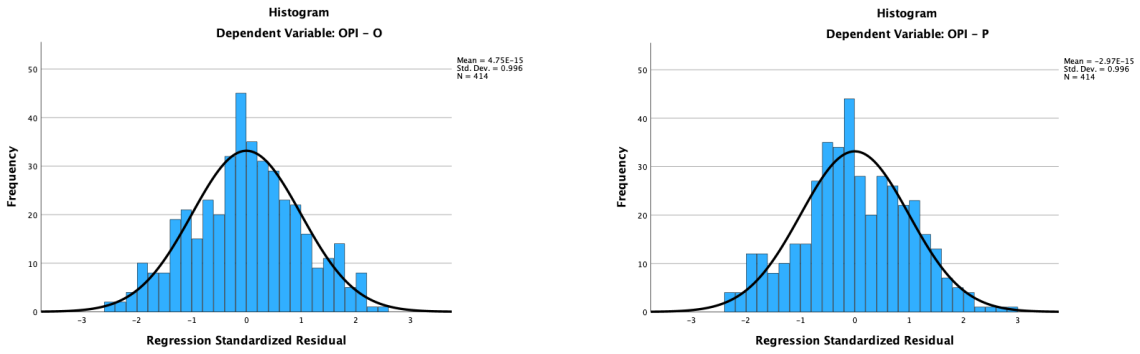


Figure 11 represents two separate models for both response variables (OPI-O and OPI-P) and visually demonstrates that the residuals appear to be approximately normally distributed.

Further, the mean and standard deviations should be approximately 0 and 1, respectively, and an inspection of the histograms in Figure 11 verified this requirement.

Figure 12

Normal P-P Plots

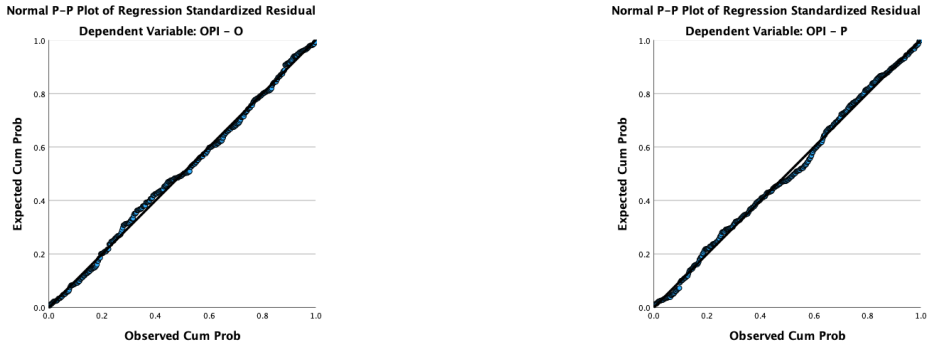
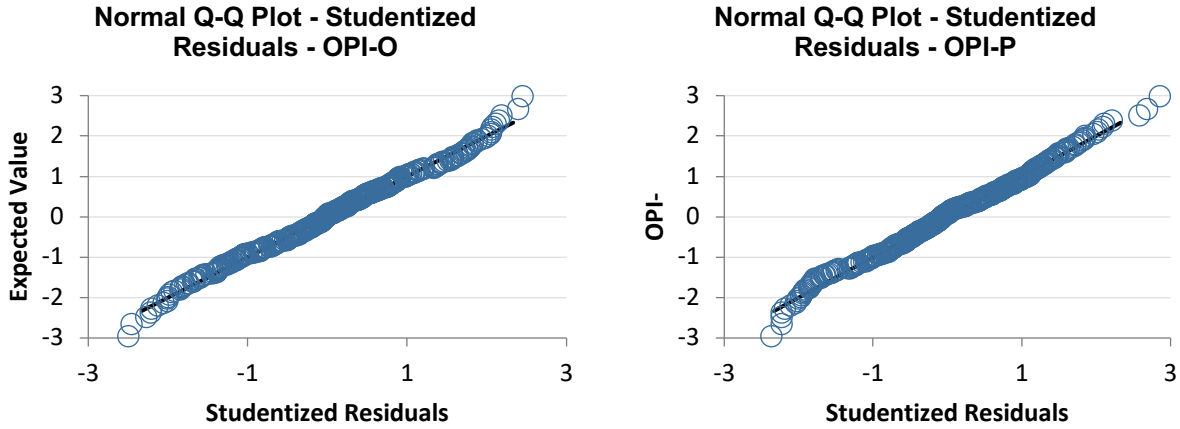


Figure 13

Normal Q-Q Plots



The normal P-P plots in Figure 12 and the normal Q-Q plots in Figure 13 show that the data points are approximately aligned with the diagonal line. To verify the observations of normality from the histograms with superimposed normal curves and normal Q-Q and P-P plots, a series of normality tests was conducted in Excel with the StatPlus plugin. The tests of normality used were Shapiro-Wilk W, D'Agostino kurtosis, D'Agostino omnibus, and Jarque-

Bera. The results in Table 7 show that the null hypothesis of the test cannot be rejected, which means that the errors are approximately normally distributed and the assumption of normality had been met.

This concludes the testing of the MLR assumptions, and both models, one for each psychological construct (optimism and pessimism), have passed all assumptions.

Table 7

Normality Tests

Dependent variable	Test	Test statistic	*p*	H0 (5%)
OPI-O	Shapiro-Wilk W	.99329	.06206	Cannot reject
	D'Agostino kurtosis	−1.52866	.12635	Cannot reject
	D'Agostino omnibus	2.35493	.30806	Cannot reject
	Jarque-Bera	1.95432	.37638	Cannot reject
OPI-P	Shapiro-Wilk W	.99335	.06503	Cannot reject
	Jarque-Bera	1.72763	.42155	Cannot reject
	D'Agostino kurtosis	−1.40554	.15986	Cannot reject
	D'Agostino omnibus	1.99604	.36861	Cannot reject

Reliability and Descriptive Statistics

Instrument Reliability and Internal Consistency

A common statistic used for determining internal consistency, and also a measure of reliability, is Cronbach's alpha (Laerd, 2013). The main purpose of this statistic is to determine how the different items on an instrument or scale measure the same construct. A questionnaire was implemented for measuring two different underlying constructs. The first construct was

optimism, which consisted of 18 questions. The second construct was pessimism, which also consisted of 18 questions. The Cronbach's alpha for the data in DATAtab are 0.85 for optimism mean scores on the OPI and 0.87 for pessimism mean scores on the OPI, which is reflects a high level of internal consistency. Laerd (2013) suggested that a level of 0.7 or higher is recommended.

Table 8

Cronbach's Alpha of OPI Constructs

Construct	Cronbach's alpha	Number of items
OPI-O	.85	18
OPI-P	.87	18

The next set of analyses tested whether or not the two psychological constructs are better represented as separate or bipolar constructs. An inspection of the correlation between OPI-O and OPI-P indicates that there is a high negative correlation of −.54, $p < .05$, which indicates that as OPI-O increases, OPI-P decreases. Further, the results of the canonical correlation in Table 10 also indicate a high correlation between the constructs at .73, $p < .05$. However, as noted in Chapter 3, Dember et al. (1989) found that although they had a similarly high correlation of −.57, $p < .05$, with a canonical correlation of .74, $p < .05$, their Cronbach's alphas for optimism and pessimism were 0.83 and 0.88, respectively. Based on the finding that the Cronbach's alphas were higher than the canonical correlation, the researchers established that the constructs should be treated separately. With highly similar results to Dember et al. (1989) relating to internal consistency of the published OPI instrument, it was decided to treat both constructs separately in this study.

Table 9

Correlation of OPI Constructs

Variables	*r*	*p*
OPI-O and OPI-P	-.54	< .001

Table 10

Canonical Correlations of OPI Constructs

	Correlation	Eigenvalue	Wilks's statistic	*F*	Num. *df*	Denom. *df*	*p*
1	.729[a]	1.137	.082	3.253	324.000	4879.554	< .001
2	.621	.629	.176	2.477	289.000	4619.243	< .001
3	.493	.321	.286	1.981	256.000	4358.075	< .001
4	.443	.244	.378	1.740	225.000	4096.080	< .001
5	.402	.193	.470	1.540	196.000	3833.294	< .001
6	.372	.160	.561	1.361	169.000	3569.765	.002
7	.305	.102	.651	1.182	144.000	3305.559	.072
8	.286	.089	.717	1.085	121.000	3040.765	.252
9	.264	.075	.781	.973	100.000	2775.508	.558
10	.252	.068	.840	.848	81.000	2509.969	.830
11	.190	.037	.897	.670	64.000	2244.424	.979
12	.176	.032	.930	.580	49.000	1979.309	.991
13	.142	.021	.960	.447	36.000	1715.371	.998
14	.103	.011	.980	.323	25.000	1454.002	.999
15	.076	.006	.990	.245	16.000	1198.217	.999
16	.057	.003	.996	.185	9.000	956.609	.996

	Correlation	Eigenvalue	Wilks's statistic	*F*	Num. *df*	Denom. *df*	*p*
17	.030	.001	.999	.095	4.000	788.000	.984
18	.007	.000	1.000	.018	1.000	395.000	.892

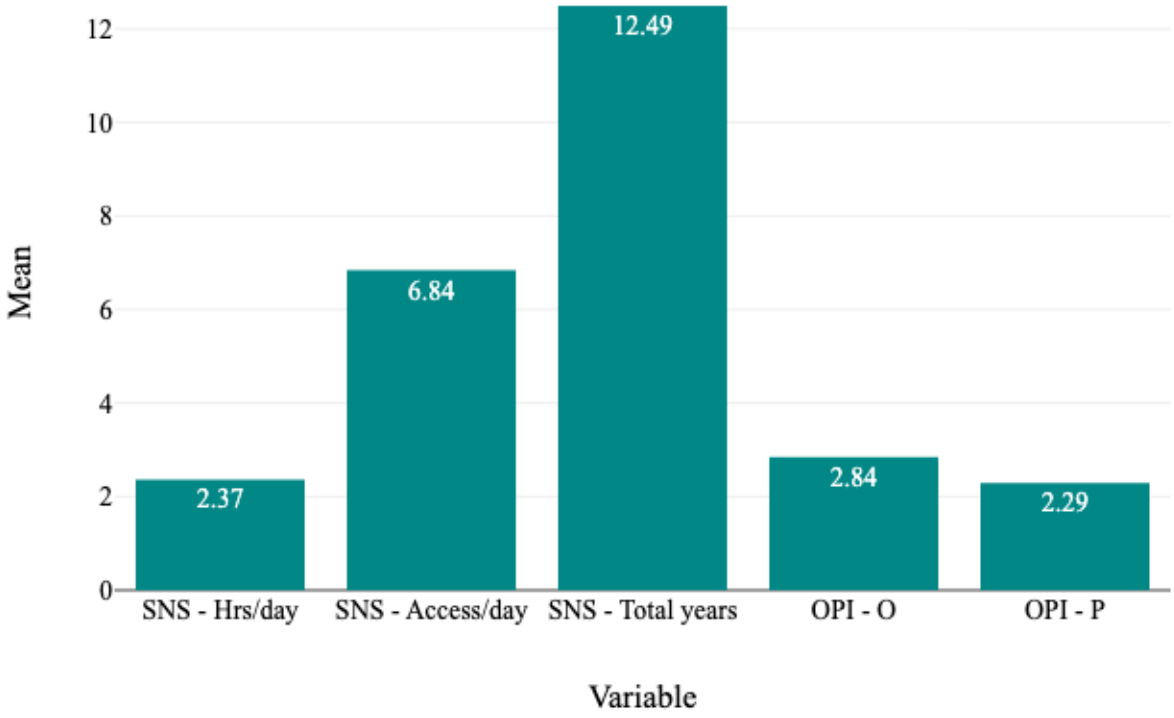
[a] Canonical correlation.

Descriptive Statistics

Descriptive statistics allow researchers to analyze data in a way that helps them meaningfully display or summarize it (Laerd, 2013). One example is identifying patterns or trends that may emerge from the data. However, Laerd also clarified that descriptive statistics do not allow researchers to make conclusions beyond the data analyzed or reach conclusions about any hypotheses. A number of figures and tables are presented in the following sections showing the distribution of the predictor and response variables overall as well as the distribution segmented by specific demographic control and mediator/moderator categories. The predictor variables are SNS hr/day, SNS access/day, and SNS total years, and the response variables are optimism and pessimism mean scores from the OPI (OPI-O and OPI-P, respectively). The control variables are demographic variables of gender, race, age, income, employment, relationship, and education. The moderator/mediator variables are main platform SNS used, main SNS content viewed, and number of SNS connections. The main measures used to describe the distribution of the data are frequency, mean, and standard deviation.

Figure 14

Mean Distribution of Predictor/Response Variables



The histogram in Figure 14 and metrics in Table 11 show that on average, people are more optimistic than pessimistic, with OPI-O at $M = 2.84$, $SD = 0.38$ and OPI-P at $M = 2.28$, $SD = 0.44$, a 19.7% difference. For the population sample of $N = 414$, the mean total years of SNS use was 12.49 ($SD = 4.39$), while the mean times SNSs were accessed per day was 6.84 ($SD = 4.9$). The mean for hours of SNS use per day was 2.37 ($SD = 1.4$).

Table 11

Distribution of SNS Use and OPI Mean Scores

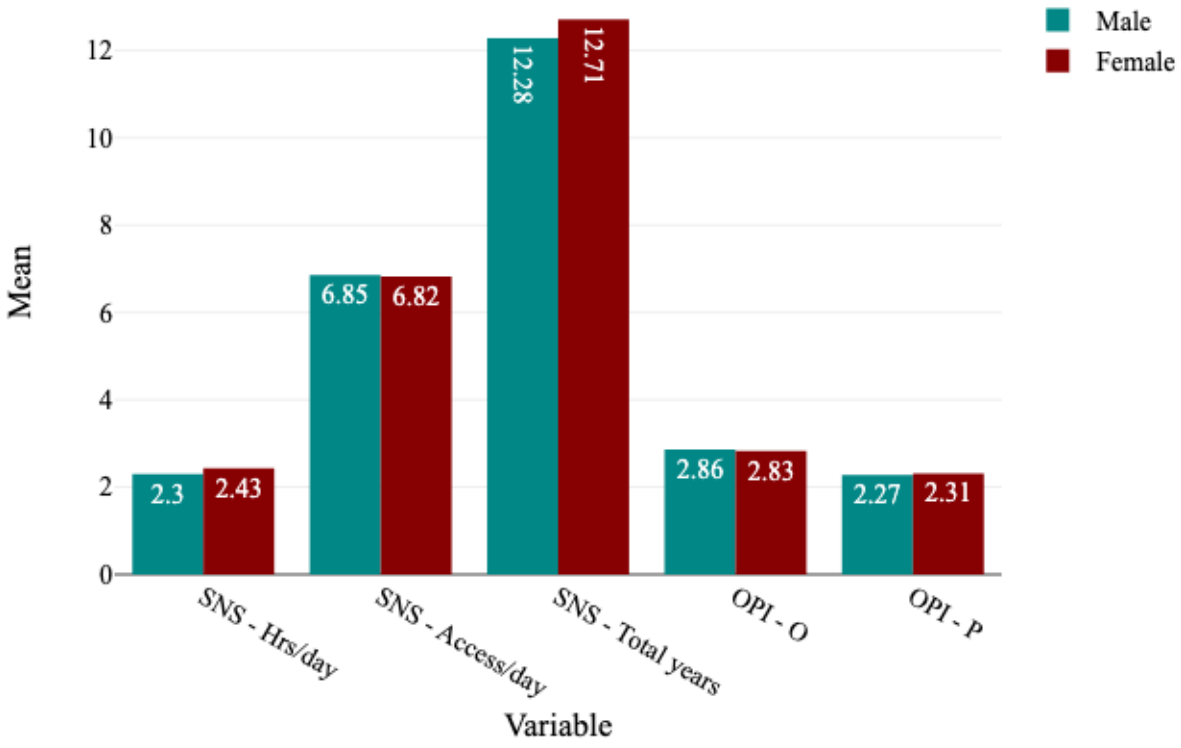
	OPI-O	OPI-P	SNS hr/day	SNS access/day	SNS total years
M	2.84	2.29	2.37	6.84	12.49

	OPI-O	OPI-P	SNS hr/day	SNS access/day	SNS total years
SD	0.38	0.44	1.4	4.9	4.39
Variance	0.14	0.2	1.96	24	19.28
Min.	1.94	1.28	0.25	1	3
Max.	3.72	3.44	6	20	22
Skew	0.03	0	0.81	1.22	−0.06
Kurtosis	−0.35	−0.39	−0.19	0.81	−0.56
95% CI	2.81; 2.88	2.25; 2.34	2.23; 2.5	6.37; 7.31	12.07; 12.91

Note. $N = 414$.

Figure 15

Mean Distribution of Predictor/Response Variables by Gender



The descriptive statistics segmented by gender in Table 12 demonstrate that the study population was slightly more male at *f* = 213 (51%) and females at *f* = 201 (49%). On average, males are slightly more optimistic that females, with a mean OPI-O score of 2.86, *SD* = 0.4, and females with a mean of 2.83, *SD* = 0.35. Conversely, females were slightly more pessimistic, with a mean OPI-P score of 2.31, *SD* 0.43, and males with a mean of 2.27, *SD* = 0.45. Looking at the distribution of the SNS degree of use predictor variables, women spend more time on SNSs per day on average, with a mean of 2.43 hours per day, *SD* = 1.4, while men spend slightly less time on SNSs, with a mean of 2.3 hours per day, *SD* = 1.4. According to these results, women and men access SNSs approximately the same number of times per day, with women at a mean of 6.82, *SD* = 4.93, and men with a mean of 6.85, *SD* = 4.88. For mean total years using SNSs, women had a slightly higher mean of 12.71 total years, *SD* = 4.28, with men at a mean of 12.28 years, *SD* = 4.49.

Table 12

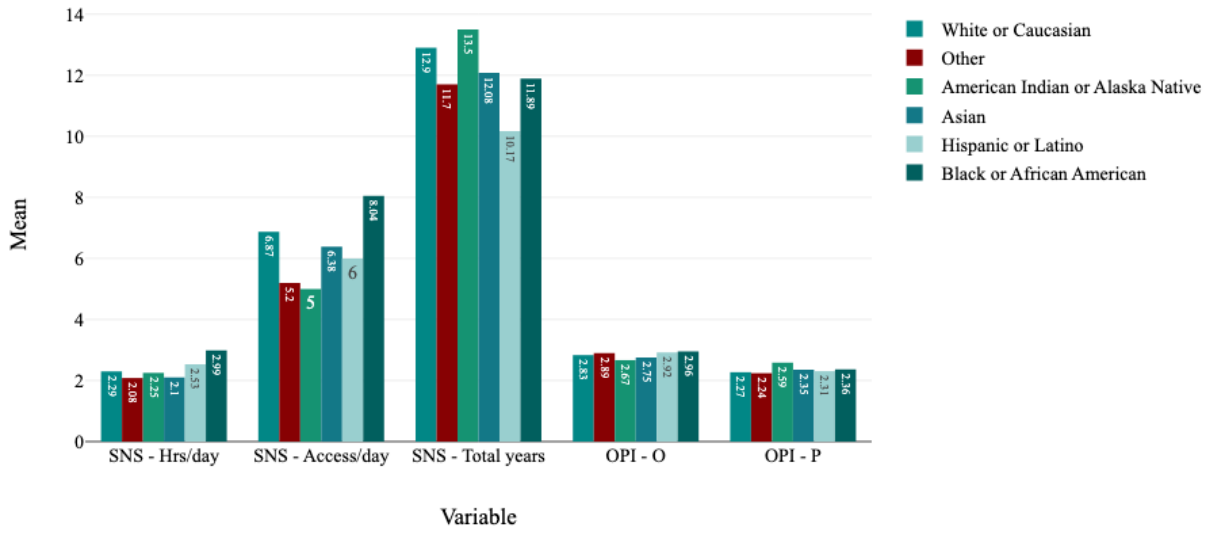
Distribution of SNS Use and OPI Mean Scores by Gender

		f	*M*	*SD*	Min.	Max.
OPI-O	Male	213	2.86	0.4	2	3.72
	Female	201	2.83	0.35	1.94	3.72
OPI-P	Male	213	2.27	0.45	1.33	3.44
	Female	201	2.31	0.43	1.28	3.44
SNS hr/day	Male	213	2.3	1.4	0.3	6
	Female	201	2.43	1.4	0.25	6
SNS access/day	Male	213	6.85	4.88	1	20
	Female	201	6.82	4.93	1	20
SNS total years	Male	213	12.28	4.49	3	22
	Female	201	12.71	4.28	3	22

Note. N = 414.

Figure 16

Mean Distribution of Predictor/Response Variables by Race



Examining the degree of SNS use predictor variables and OPI mean score response variables segmented by race leads to a number of observations. On average, Black or African American participants had the highest mean for OPI-O at $M = 2.96$, SD 0.34, while American Indian or Alaska Native had the lowest OPI-O at $M = 2.67$, $SD = 0.43$. When inspecting OPI-P, the race – other category had the lowest mean at $M = 2.24$, $SD = 0.37$, while American Indian or Alaska Natives had the highest OPI-P, with a mean of 2.59, $SD = 0.48$. On average, Black or African American participants spends more time on SNSs, with a mean of 2.99 hours per day, $SD = 0.47$, while the race – other category spends the least amount of time, with a mean of 2.24 hours per day, $SD = 0.5$. Similarly, Black or African American participants also access SNSs more times per day, with a mean of 8.04, $SD = 5.12$, while American Indian or Alaska Native participants access it the least, with a mean of 5, $SD = 3.56$. On average, American Indian or Alaska Native participants have used SNSs the longest, with a mean of 13.5, $SD = 2.58$, while Hispanic or Latino groups have used it the shortest time, with a mean of 10.17, $SD = 3.41$. It is

important to note that the frequency for American Indian or Alaska Natives is *f* = 4, 0.96%. Since this sample represents the upper and lower bound mean for a number of variables, it may not be representative of this racial group in the United States due to a low frequency.

Table 13

Distribution of SNS Use and OPI Mean Scores by Race

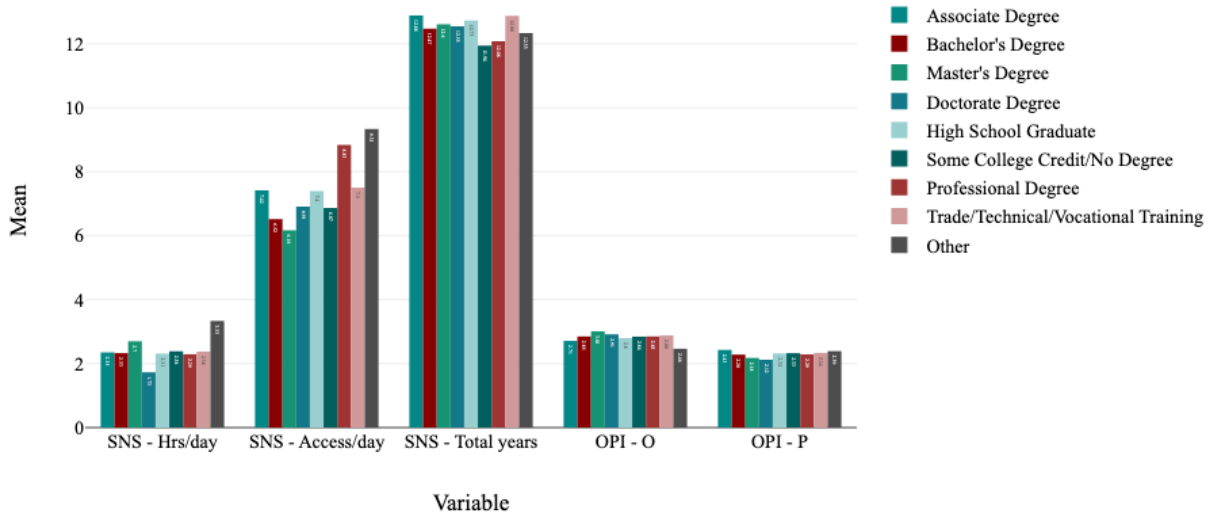
		f	*M*	*SD*	Min.	Max.
OPI-O	White or Caucasian	287	2.83	0.38	1.94	3.72
	Black or African American	46	2.96	0.34	2.22	3.61
	Asian	37	2.75	0.36	2	3.56
	Hispanic or Latino	30	2.92	0.38	2.11	3.72
	Other	10	2.89	0.36	2.39	3.44
	American Indian or Alaska Native	4	2.67	0.43	2.06	3.06
OPI-P	White or Caucasian	287	2.27	0.45	1.28	3.44
	Black or African American	46	2.36	0.47	1.39	3.22
	Asian	37	2.35	0.42	1.44	3.06
	Hispanic or Latino	30	2.31	0.39	1.5	2.89
	Other	10	2.24	0.37	1.83	3.22
	American Indian or Alaska Native	4	2.59	0.48	2.11	3.17
SNS hr/day	White or Caucasian	287	2.29	1.41	0.5	6
	Black or African American	46	2.99	1.33	1	5
	Asian	37	2.1	1.15	0.25	5
	Hispanic or Latino	30	2.53	1.33	1	6
	Other	10	2.08	1.92	0.3	6
	American Indian or Alaska Native	4	2.25	0.5	2	3
SNS access/day	White or Caucasian	287	6.87	4.99	1	20
	Black or African American	46	8.04	5.12	1	20
	Asian	37	6.38	4.54	1	20
	Hispanic or Latino	30	6	4.2	1	20
	Other	10	5.2	4.57	1	15
	American Indian or Alaska Native	4	5	3.56	2	10
SNS total years	White or Caucasian	287	12.9	4.45	3	22

		f	*M*	*SD*	Min.	Max.
	Black or African American	46	11.89	3.79	3	20
	Asian	37	12.08	4.82	3	20
	Hispanic or Latino	30	10.17	3.41	3	15
	Other	10	11.7	5.06	4	20
	American Indian or Alaska Native	4	13.5	2.38	10	15

Note. $N = 414$.

Figure 17

Mean Distribution of Predictor/Response Variables by Education



An inspection of the predictor and response variables segmented by educational level showed a number of insights. The educational group with the highest OPI-O were people with a master's degree, with a mean OPI-O of 3.01, $SD = 0.36$, while the group with the lowest mean OPI-O was the other category, with a mean of 2.46, $SD = 0.05$. On average, the educational group with the lowest mean OPI-P was doctorate degree, with a mean of 2.12, $SD = 0.45$, while people with an associate degree reported the highest mean OPI-P at 2.43, $SD = 0.42$. On average, those in the other group reported the highest amount of hours per day of SNS use, with a mean of 3.33, $SD = 1.53$, while those with a doctorate degree reported the lowest amount of time spent on

SNSs, with a mean of 1.73, *SD* = 0.9. On average, those in the other group reported the highest amount of times accessing SNSs per day, with a mean of 9.33, *SD* = 9.29, while those with a master's degree access SNSs the least, with a mean of 6.16, *SD* = 4.16. Regarding years of using SNSs, those with an associate degree or trade/technical/vocational training had the same mean, at 12.88 years, *SD* = 3.7 and 3.81, respectively. The group with the lowest mean total time using SNSs was some college/no degree, with a mean of 11.94 years, *SD* = 11.63.

Table 14

Distribution of SNS Use and OPI Mean Scores by Education

		f	*M*	*SD*	Min.	Max.
OPI-O	Bachelor degree	194	2.85	0.38	1.94	3.72
	Some college credit/no degree	52	2.84	0.34	2.11	3.44
	Associate degree	43	2.71	0.32	2.06	3.28
	Master degree	43	3.01	0.36	2.17	3.72
	High school graduate	40	2.8	0.43	2	3.72
	Trade/technical/ vocational training	16	2.88	0.36	2	3.39
	Professional degree	12	2.85	0.37	2.39	3.56
	Doctorate degree	11	2.91	0.36	2.22	3.56
	Other	3	2.46	0.5	2	3
OPI-P	Bachelor degree	194	2.28	0.44	1.33	3.44
	Some college credit/no degree	52	2.33	0.44	1.56	3.28
	Associate degree	43	2.43	0.42	1.39	3.44
	Master degree	43	2.18	0.49	1.39	3.22
	High school graduate	40	2.32	0.43	1.28	2.94
	Trade/technical/ vocational training	16	2.34	0.42	1.78	3.11
	Professional degree	12	2.29	0.5	1.44	3.11
	Doctorate degree	11	2.12	0.45	1.33	2.72
	Other	3	2.39	0.55	1.78	2.83
SNS hr/day	Bachelor degree	194	2.33	1.36	0.25	6

		f	*M*	*SD*	Min.	Max.
	Some college credit/no degree	52	2.38	1.27	0.5	5
	Associate degree	43	2.35	1.52	0.5	6
	Master degree	43	2.7	1.78	0.5	6
	High school graduate	40	2.31	1.2	0.5	5
	Trade/technical/ vocational training	16	2.38	1.75	1	6
	Professional degree	12	2.29	1.14	0.5	4
	Doctorate degree	11	1.73	0.9	1	3
	Other	3	3.33	1.53	2	5
SNS access/day	Bachelor degree	194	6.52	4.9	1	20
	Some college credit/no degree	52	6.87	4.58	1	20
	Associate degree	43	7.42	5.19	1	20
	Master degree	43	6.16	4.16	2	20
	High school graduate	40	7.4	4.81	1	20
	Trade/technical/ vocational training	16	7.5	5.16	1	18
	Professional degree	12	8.83	6.13	1	20
	Doctorate degree	11	6.91	5.74	1	15
	Other	3	9.33	9.29	3	20
SNS total years	Bachelor degree	194	12.47	4.62	3	22
	Some college credit/no degree	52	11.94	4.63	3	20
	Associate degree	43	12.88	3.7	5	20
	Master degree	43	12.6	4.73	3	20
	High school graduate	40	12.73	3.84	4	20
	Trade/technical/ vocational training	16	12.88	3.81	6	20
	Professional degree	12	12.08	4.06	7	20
	Doctorate degree	11	12.55	3.8	4	18
	Other	3	12.33	6.43	5	17

Note. $N = 414$.

Figure 18

Mean Distribution of Predictor/Response Variables by Age

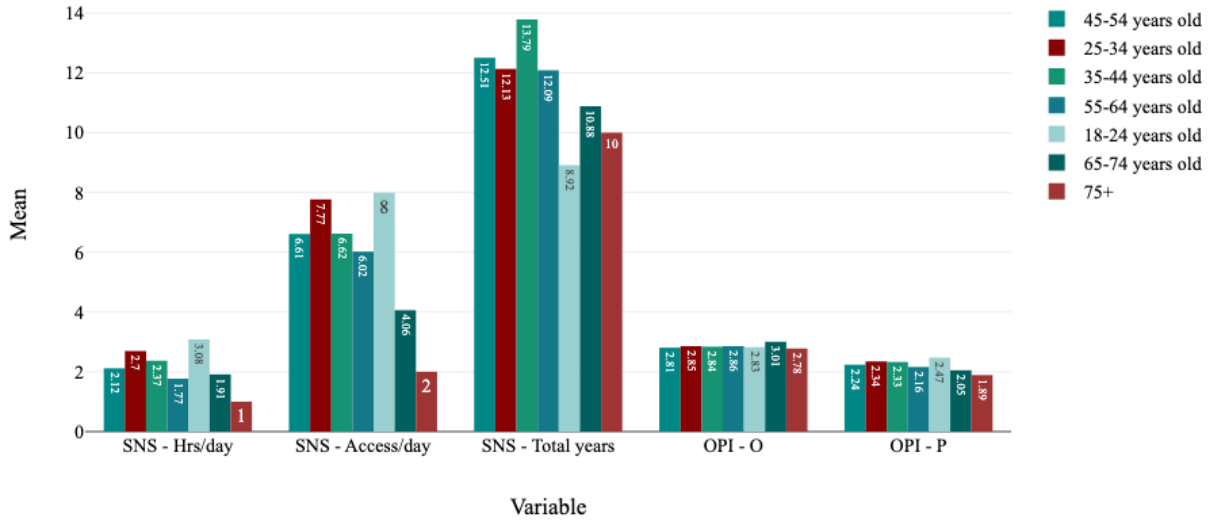


Figure 18 and Table 15 show the distribution of the means of the predictor and response variables segmented by age. The data illustrate that the age group with the highest mean OPI-O was 65–74 years of age, with a mean of 3.01, *SD* = 0.34, while 75+ had the lowest mean OPI-O at *M* = 2.78, *SD* = NaN. The age group with the highest mean OPI-P was 18–24 years of age, with a mean of 2.47, *SD* = 0.37, while 75+ had the lowest mean OPI-P at *M* = 1.89, *SD* = NaN. On average, people 18–26 years of age spend the most hours per day on SNSs, with a mean of 3.08, *SD* = 1.53, while people 75+ spend the least amount time on SNSs, with a mean of 1, *SD* = NaN. People 25–34 years of age had the highest mean for average number of times accessing SNSs, with a mean of 7.77, *SD* = 4.95, while people ages 75+ had the lowest mean at *M* = 2, Sd = NaN. On average, people 35–44 years of age have been on SNSs the longest, with a mean of 13.79, *SD* = 4.46, while people 18–24 years of age had the lowest mean of *M* = 8.92, *SD* = 3.19. It is important to note that age group 75+ consisted of *f* = 1 (0.2%), which is why the standard deviation was not available for this group in different segments (i.e., NaN). As such, the

descriptive statistics in Table 15 may not be representative of the 75+ age group in the United States.

Table 15

Distribution of SNS Use and OPI Mean Scores by Age

		f	*M*	*SD*	Min.	Max.
OPI-O	35–44 years old	133	2.84	0.38	2.06	3.72
	25–34 years old	115	2.85	0.41	1.94	3.61
	45–54 years old	80	2.81	0.37	2	3.67
	55–64 years old	44	2.86	0.31	2.22	3.5
	18–24 years old	24	2.83	0.32	2.17	3.72
	65–74 years old	17	3.01	0.34	2.61	3.72
	75+	1	2.78	NaN	2.78	2.78
OPI-P	35–44 years old	133	2.33	0.45	1.33	3.44
	25–34 years old	115	2.34	0.45	1.28	3.44
	45–54 years old	80	2.24	0.43	1.33	3.17
	55–64 years old	44	2.16	0.4	1.39	3.22
	18–24 years old	24	2.47	0.37	1.39	3
	65–74 years old	17	2.05	0.43	1.39	2.94
	75+	1	1.89	NaN	1.89	1.89
SNS hr/day	35–44 years old	133	2.37	1.41	0.3	6
	25–34 years old	115	2.7	1.44	0.5	6
	45–54 years old	80	2.12	1.22	0.25	6
	55–64 years old	44	1.77	1.18	0.5	6
	18–24 years old	24	3.08	1.53	1	6
	65–74 years old	17	1.91	1.3	1	5
	75+	1	1	NaN	1	1
SNS access/day	35–44 years old	133	6.62	4.75	1	20
	25–34 years old	115	7.77	4.95	1	20
	45–54 years old	80	6.61	5.18	1	20
	55–64 years old	44	6.02	4.97	1	20
	18–24 years old	24	8	4.91	2	20
	65–74 years old	17	4.06	2.28	1	10

		f	*M*	*SD*	Min.	Max.
	75+	1	2	NaN	2	2
SNS total years	35–44 years old	133	13.79	4.46	3	22
	25–34 years old	115	12.13	4.22	3	21
	45–54 years old	80	12.51	4.41	3	20
	55–64 years old	44	12.09	4.18	4	20
	18–24 years old	24	8.92	3.19	3	15
	65–74 years old	17	10.88	3.37	4	15
	75+	1	10	NaN	10	10

Note. $N = 414$.

Figure 19

Mean Distribution of Predictor/Response Variables by Employment

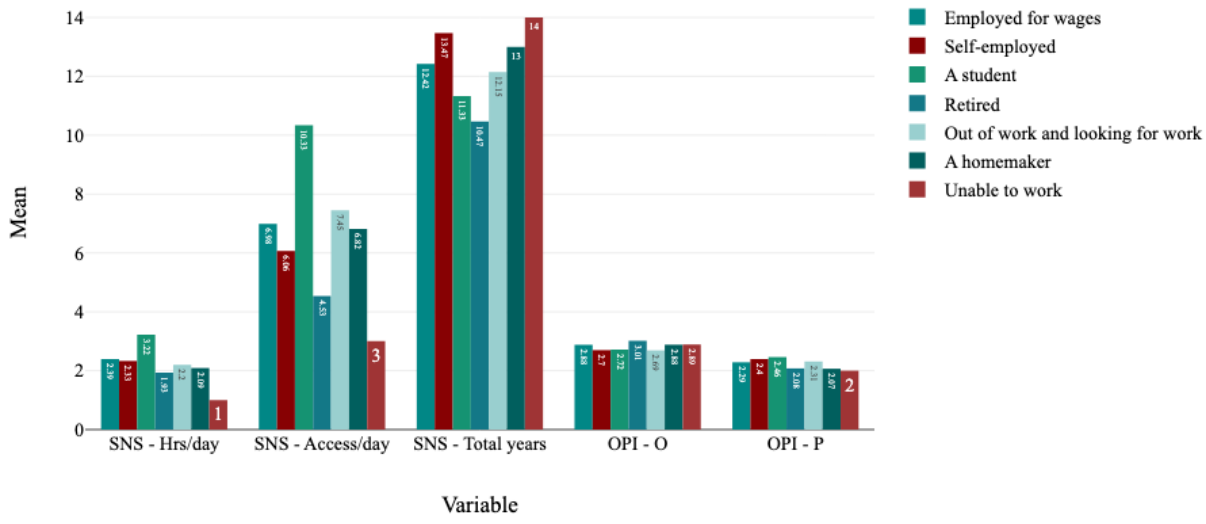


Figure 19 and Table 16, which show the distribution of the predictor and responses variables segmented by employment, indicates that on average people who are retired have an OPI-O at $M = 3.01$, $SD = 0.37$, while people out of work or looking for work had the lowest, with a mean of 2.69, *SD* 0.38. The employment group with the highest mean OPI-P were students, with a mean of 2.46, SD = 0.37, while homemakers had the lowest OPI-P, with a mean

of 2.07, *SD* = 0.39. On average, students spent the most hours per day on SNSs, with a mean of 3.22, *SD* = 1.09, while people who are unable to work were the lowest, with a mean of 1, *SD* = NaN. Students access SNSs more times per day than any other group, with a mean of 10.33 times per day, *SD* = 5.43, while people who are unable to work have the lowest with a mean of 3, *SD* = NaN. On average, people that are unable to work have been on SNSs the longest, with a mean of 14 years, *SD* = NaN, while retired people have been on SNSs the shortest, with a mean of 10.47, *SD* = 3.11. The unable-to-work group only had *f* = 1, 0.2%. As such, that this group may not represent the true mean for this employment category in the United States.

Table 16

Distribution of SNS Use and OPI Mean Scores by Employment

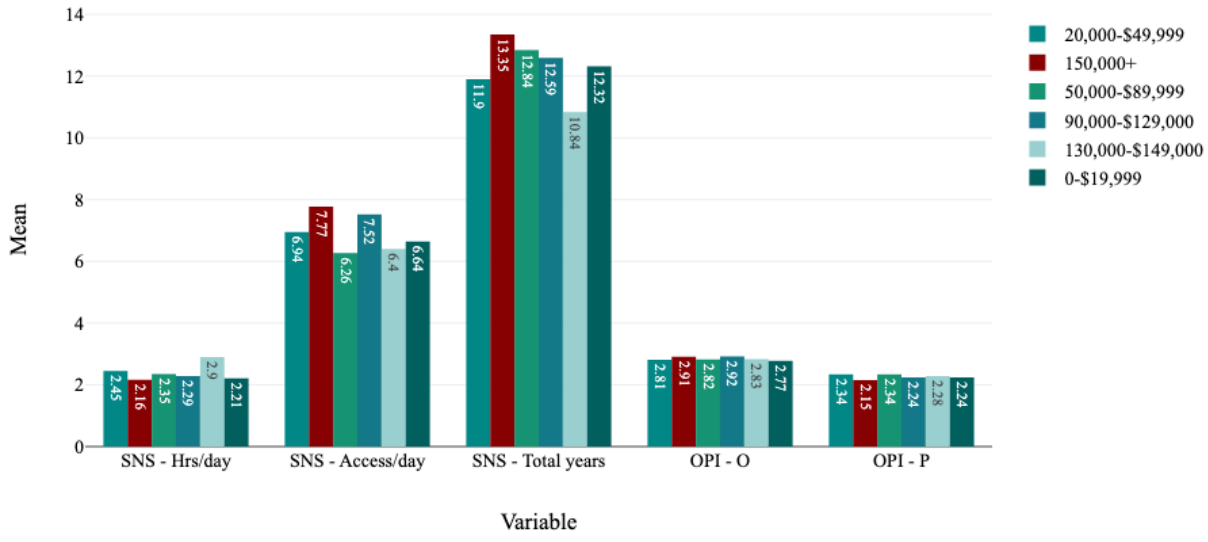
		f	*M*	*SD*	Min.	Max.
OPI-O	Employed for wages	296	2.88	0.37	1.94	3.72
	Self-employed	62	2.7	0.37	2	3.5
	Out of work and looking for work	20	2.69	0.38	2.11	3.56
	Retired	15	3.01	0.37	2.56	3.72
	Homemaker	11	2.88	0.24	2.5	3.33
	Student	9	2.72	0.3	2.28	3.17
	Unable to work	1	2.89	NaN	2.89	2.89
OPI-P	Employed for wages	296	2.29	0.46	1.28	3.44
	Self-employed	62	2.4	0.4	1.56	3.17
	Out of work and looking for work	20	2.31	0.36	1.5	2.94
	Retired	15	2.08	0.37	1.39	2.83
	Homemaker	11	2.07	0.39	1.39	2.67
	Student	9	2.46	0.37	1.94	2.94
	Unable to work	1	2	NaN	2	2
SNS hr/day	Employed for wages	296	2.39	1.42	0.25	6
	Self-employed	62	2.33	1.41	0.5	6
	Out of work and looking for work	20	2.2	1.2	1	6
	Retired	15	1.93	1.22	1	5

		f	*M*	*SD*	Min.	Max.
	Homemaker	11	2.09	1.45	1	5
	Student	9	3.22	1.09	2	5
	Unable to work	1	1	NaN	1	1
SNS access/day	Employed for wages	296	6.98	4.9	1	20
	Self-employed	62	6.06	5.14	1	20
	Out of work and looking for work	20	7.45	3.53	3	15
	Retired	15	4.53	3.09	1	10
	Homemaker	11	6.82	5.96	1	20
	Student	9	10.33	5.43	3	20
	Unable to work	1	3	NaN	3	3
SNS total years	Employed for wages	296	12.42	4.33	3	22
	Self-employed	62	13.47	4.93	3	22
	Out of work and looking for work	20	12.15	3.47	7	20
	Retired	15	10.47	3.11	4	15
	Homemaker	11	13	4.75	5	20
	Student	9	11.33	5.29	3	20
	Unable to work	1	14	NaN	14	14

Note. $N = 414$.

Figure 20

Mean Distribution of Predictor/Response Variables by Income



A number of observations were can be made from the distribution of predictor and response variable means segmented by income. On average, the income category with the highest mean OPI-O was $90,000–$129,999, with a mean of 2.92, *SD* = 0.36, while the income category with the lowest mean OPI-O was $0–$19,999, with a mean of 2.24, *SD* = 0.39. The income category with the highest OPI-P was both the $20,000–$49,999 and $50,000–$89,999 categories, with a mean of 2.34, *SD* = 0.48 and 0.43, respectively. The category with the lowest mean OPI-P was the $150,000+ income category, with a mean of 2.24, *SD* = 0.41. The income category that spends the most time on SNSs per day is the $130,000–$149,999 category, with a mean of 2.9 hours per day, *SD* = 1.85, while income earners in the $150,000+ spent the least amount of time on SNSs, with a mean of 2.16, *SD* = 1.13. On average, people who earn $150,000+ access SNSs more times per day, with a mean of 7.77, *SD* = 5.12, while earners in the $50,000–$89,000 income category access SNSs the least, with a mean of 6.26 times per day, *SD* = 4.55. On average, incomes earners in the $50,000–$89,999 category have been using SNSs the

longest, with a mean of 12.84 years, *SD* = 4.17, while the $130,000–$149,999 category has been on SNSs the least, with a mean of 10.84 years, *SD* = 4.1.

Table 17

Distribution of SNS Use and OPI Mean Scores by Income

		f	*M*	*SD*	Min.	Max.
OPI-O	$50,000–$89,999	152	2.82	0.37	1.94	3.72
	$20,000–$49,999	90	2.81	0.39	2	3.72
	$90,000–$129,999	79	2.92	0.36	2	3.67
	$150,000+	43	2.91	0.35	2.22	3.67
	$130,000–$149,999	25	2.83	0.42	2.06	3.61
	$0–$19,999	25	2.77	0.36	2.11	3.56
OPI-P	$50,000–$89,999	152	2.34	0.43	1.33	3.28
	$20,000–$49,999	90	2.34	0.48	1.39	3.44
	$90,000–$129,999	79	2.24	0.44	1.28	3.22
	$150,000+	43	2.15	0.41	1.33	3.06
	$130,000–$149,999	25	2.28	0.46	1.61	3.44
	$0–$19,999	25	2.24	0.39	1.39	2.94
SNS hr/day	$50,000–$89,999	152	2.35	1.41	0.3	6
	$20,000–$49,999	90	2.45	1.52	0.5	6
	$90,000–$129,999	79	2.29	1.23	0.25	5
	$150,000+	43	2.16	1.13	1	6
	$130,000–$149,999	25	2.9	1.85	0.5	6
	$0–$19,999	25	2.21	1.2	0.5	5
SNS access/day	$50,000–$89,999	152	6.26	4.55	1	20
	$20,000–$49,999	90	6.94	5.16	1	20
	$90,000–$129,999	79	7.52	5.37	1	20
	$150,000+	43	7.77	5.12	1	20
	$130,000–$149,999	25	6.4	3.93	1	15
	$0–$19,999	25	6.64	4.9	1	20
SNS total years	$50,000–$89,999	152	12.84	4.17	3	22
	$20,000–$49,999	90	11.9	4.37	3	20
	$90,000–$129,999	79	12.59	4.55	3	21

		f	*M*	*SD*	Min.	Max.
	$150,000+	43	13.35	4.63	4	22
	$130,000–$149,999	25	10.84	4.1	4	20
	$0–$19,999	25	12.32	4.85	4	20

Note. $N = 414$.

Figure 21

Mean Distribution of Predictor/Response Variables by Relationship

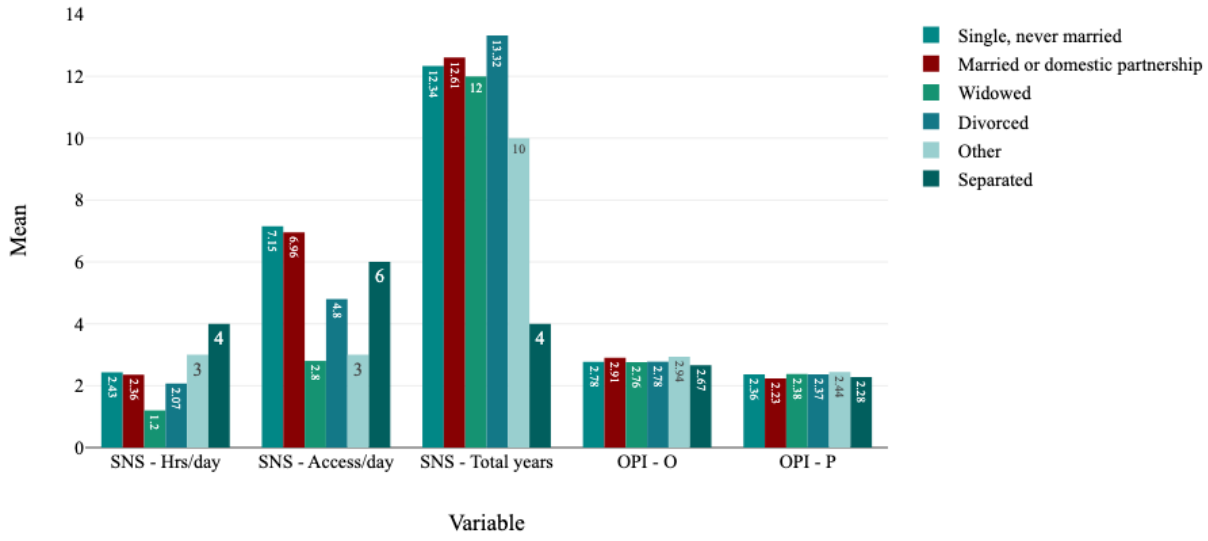


Figure 21 and Table 18 show that on average people that are married or in a domestic partnership had the highest mean OPI-O at $M = 2.91$, $SD = 0.37$, while separated people had the lowest mean at 2.67, $SD = 0.23$. Conversely, people who were married or in a domestic partnership had the lowest OPI-P, with a mean of 2.23, $SD = 0.46$, while the other category had the highest mean OPI-P of 2.44, SD = NaN. On average, separated people spend more time on SNSs, with a mean hours per day of 4, $SD = 0$, while widowed people spend the least hours per day on SNSs, with a mean of 1.2, $SD = 0.45$. On average, single people who have never married access SNSs more times per day, with a mean of 7.15, $SD = 5.07$, while the widowed category accesses SNSs the least, with a mean of 2.8, $SD = 2.05$. The divorced category has been using

SNSs the longest, with a mean of 13.32 years, *SD* = 3.88, while the separated category reported the least amount of years, with a mean of 4, *SD* = 1.41.

Table 18

Distribution of SNS Use and OPI Mean Scores by Relationship

		f	*M*	*SD*	Min.	Max.
OPI-O	Married or domestic partnership	223	2.91	0.37	1.94	3.72
	Single, never married	158	2.78	0.38	2	3.72
	Divorced	25	2.78	0.4	2.17	3.72
	Widowed	5	2.76	0.28	2.28	3
	Separated	2	2.67	0.23	2.5	2.83
	Other	1	2.94	NaN	2.94	2.94
OPI-P	Married or domestic partnership	223	2.23	0.46	1.28	3.44
	Single, never married	158	2.36	0.41	1.33	3.22
	Divorced	25	2.37	0.47	1.39	3.06
	Widowed	5	2.38	0.45	2.11	3.17
	Separated	2	2.28	0.16	2.17	2.39
	Other	1	2.44	NaN	2.44	2.44
SNS hr/day	Married or domestic partnership	223	2.36	1.41	0.25	6
	Single, never married	158	2.43	1.36	0.5	6
	Divorced	25	2.07	1.55	0.5	6
	Widowed	5	1.2	0.45	1	2
	Separated	2	4	0	4	4
	Other	1	3	NaN	3	3
SNS access/day	Married or domestic partnership	223	6.96	4.9	1	20
	Single, never married	158	7.15	5.07	1	20
	Divorced	25	4.8	3.44	1	15
	Widowed	5	2.8	2.05	1	5
	Separated	2	6	5.66	2	10
	Other	1	3	NaN	3	3

		f	*M*	*SD*	Min.	Max.
SNS total years	Married or domestic partnership	223	12.61	4.4	3	22
	Single, never married	158	12.34	4.44	3	22
	Divorced	25	13.32	3.88	4	20
	Widowed	5	12	2.74	10	15
	Separated	2	4	1.41	3	5
	Other	1	10	NaN	10	10

Note. $N = 414$.

Figure 22

Mean Distribution of Predictor/Response Variables by Main Platform

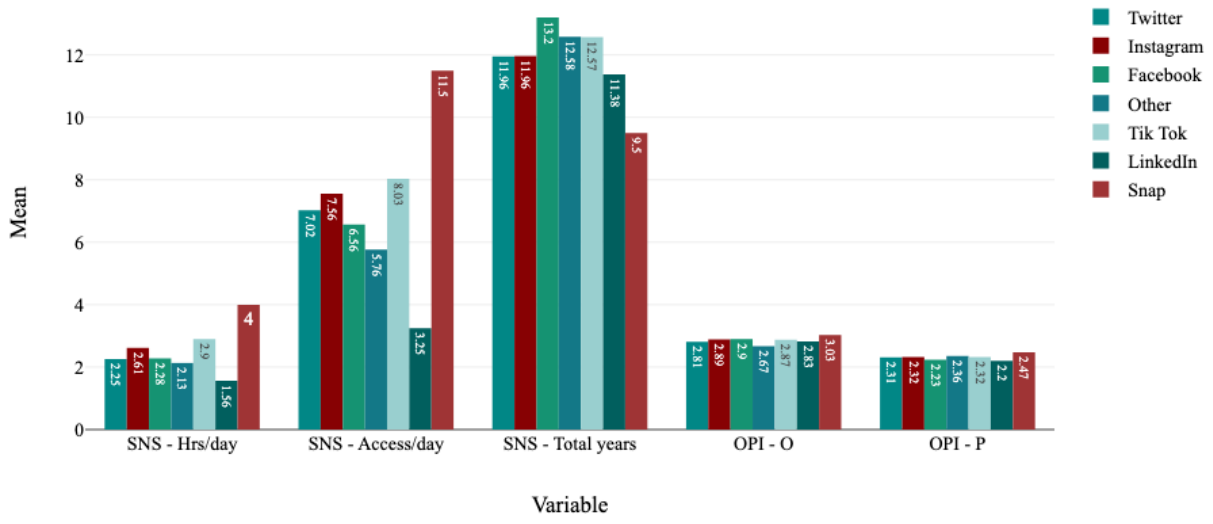


Figure 22 and Table 19 have Facebook as the most frequent main SNS platform of the sample population, $f = 140$, 33.8%, while Snap was the least used main SNS platform at $f = 2$, 0.48%. The main SNS platform with the highest mean OPI-O was Snap, with a mean of 3.03, $SD = 0.04$, while the other category had the lowest mean of 2.67, $SD = 0.35$. The main SNS platform with the highest mean OPI-P was Snap, with a mean of 2.47, $SD = 0.28$, while the lowest was LinkedIn, with a mean of 2.2, $SD = 0.37$. Those who use Tik Tok as a main SNS platform spend

the highest mean hours per day on SNS, with a mean of 2.9, *SD* = 1.49, while LinkedIn users spent the least amount of time on SNS, with a mean of 1.56 hours per day, *SD* = 1.12. People who use Snap as a main SNS platform access SNS more times per day, with a mean of 11.5, *SD* = 12.2, while people who use LinkedIn as a main SNS platform access it the least with a mean of 3.25, *SD* = 2.19. On average, people who use Facebook as a main SNS has the highest mean total years of using SNS, with a mean of 13.2 years, *SD* = 4.4, while people who use Snap as a main platform had the lowest mean total years of 9.5, *SD* = 3.54.

Table 19

Distribution of SNS Use and OPI Mean Scores by Main SNS Platform Used

		f	*M*	*SD*	Min.	Max.
OPI-O	Facebook	140	2.9	0.35	2.06	3.72
	Twitter	93	2.81	0.43	1.94	3.67
	Instagram	81	2.89	0.34	2.17	3.67
	Other	55	2.67	0.35	2	3.56
	Tik Tok	35	2.87	0.36	2.22	3.61
	LinkedIn	8	2.83	0.34	2.33	3.33
	Snap	2	3.03	0.04	3	3.06
OPI-P	Facebook	140	2.23	0.43	1.39	3.28
	Twitter	93	2.31	0.5	1.33	3.44
	Instagram	81	2.32	0.44	1.33	3.22
	Other	55	2.36	0.41	1.5	3.44
	Tik Tok	35	2.32	0.44	1.28	3.22
	LinkedIn	8	2.2	0.37	1.78	2.72
	Snap	2	2.47	0.28	2.28	2.67
SNS hr/day	Facebook	140	2.28	1.41	0.25	6
	Twitter	93	2.25	1.32	0.5	6
	Instagram	81	2.61	1.39	0.5	6
	Other	55	2.13	1.36	0.3	6
	Tik Tok	35	2.9	1.49	1	6

		f	*M*	*SD*	Min.	Max.
	LinkedIn	8	1.56	1.12	0.5	4
	Snap	2	4	0	4	4
SNS access/day	Facebook	140	6.56	4.92	1	20
	Twitter	93	7.02	4.69	2	20
	Instagram	81	7.56	4.97	1	20
	Other	55	5.76	4.65	1	20
	Tik Tok	35	8.03	5.11	1	20
	LinkedIn	8	3.25	2.19	1	6
	Snap	2	11.5	12.02	3	20
SNS total years	Facebook	140	13.2	4.4	3	22
	Twitter	93	11.96	4.18	3	20
	Instagram	81	11.96	4.75	3	22
	Other	55	12.58	4.28	4	20
	Tik Tok	35	12.57	3.99	4	20
	LinkedIn	8	11.38	4.96	5	20
	Snap	2	9.5	3.54	7	12

Note. $N = 414$.

Figure 23

Mean Distribution of Predictor/Response Variables by Main Content

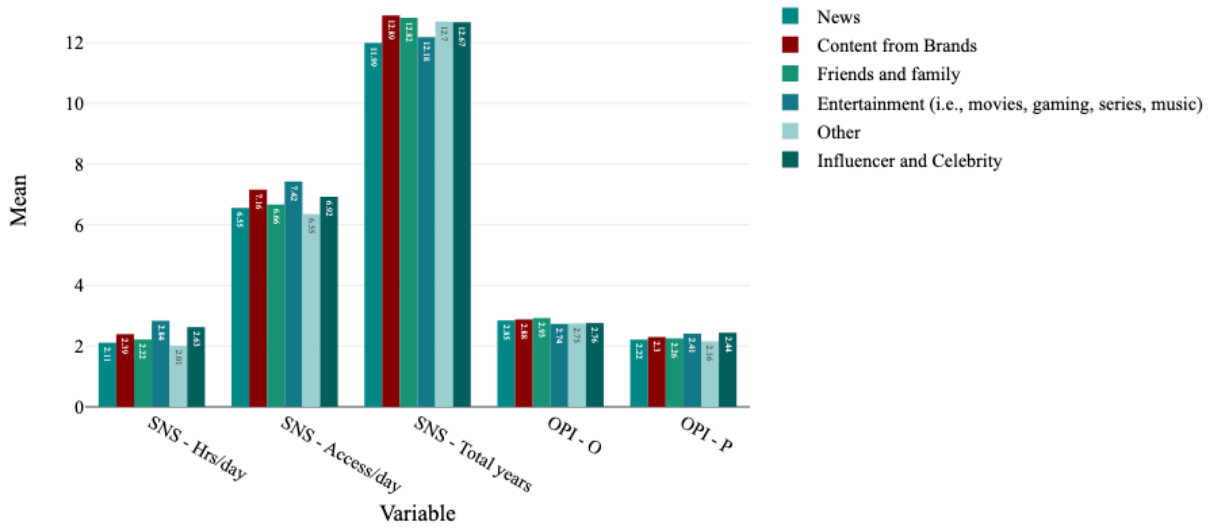


Figure 23 and Table 20 shows that the most participants viewed content from friends and family on SNSs with *f* = 168, 40.6%, while content from brands was the least viewed, with *f* = 19, 4.9%. The highest mean OPI-O based on the main type of content viewed was content from friends and family, with a mean of 2.93, *SD* = 0.36, while the lowest mean OPI-O was from content labeled as other, with a mean of 2.75, *SD* = 0.34. The highest mean OPI-P based on main SNS content viewed is from influencer and celebrity content, with a mean of 2.44, *SD* = 0.49, while the lowest mean was from content labeled as other, with a mean of 2.16, *SD* = 0.3. People whose main SNS content viewed was entertainment had the highest mean hours per day of SNS use, with a mean of 2.84, *SD* = 1.51, while the lowest mean was from the category labeled other, with a mean of 2.01 hours per day, *SD* = 1.4. People whose main SNS content viewed was from brand content accessed SNSs the most, with a mean times accessed per day of 7.16, *SD* = 5.63, while the lowest times accessed per day was from the category labeled as other, with a mean of

6.35, *SD* = 5.6. On average, people who viewed brand content as a main type had the highest mean total years using SNSs, with a mean of 12.89, *SD* = 3.89, while news content had the lowest mean total years at 11.99, *SD* = 3.99.

Table 20

Distribution of SNS Use and OPI Mean Scores by Main Content Viewed

		f	*M*	*SD*	Min.	Max.
OPI-O	Friends and family	168	2.93	0.36	2.06	3.72
	Entertainment (i.e., movies, gaming, series, music)	98	2.74	0.37	1.94	3.67
	News	82	2.85	0.38	2	3.61
	Influencer and celebrity	24	2.76	0.41	2	3.61
	Other	23	2.75	0.34	2.11	3.39
	Content from brands	19	2.88	0.37	2.33	3.61
OPI-P	Friends and family	168	2.26	0.46	1.39	3.44
	Entertainment (i.e., movies, gaming, series, music)	98	2.41	0.4	1.5	3.22
	News	82	2.22	0.43	1.33	3.44
	Influencer and celebrity	24	2.44	0.49	1.28	3.06
	Other	23	2.16	0.3	1.61	2.83
	Content from brands	19	2.3	0.52	1.33	3.44
SNS hr/day	Friends and family	168	2.22	1.35	0.5	6
	Entertainment (i.e., movies, gaming, series, music)	98	2.84	1.51	0.5	6
	News	82	2.11	1.3	0.25	6
	Influencer and celebrity	24	2.63	1.24	1	5
	Other	23	2.01	1.4	0.3	6
	Content from brands	19	2.39	1.42	0.5	5
SNS access/day	Friends and family	168	6.66	5.1	1	20
	Entertainment (i.e., movies, gaming, series, music)	98	7.42	4.62	1	20
	News	82	6.55	4.65	1	20
	Influencer and celebrity	24	6.92	4.35	2	20
	Other	23	6.35	5.6	1	20
	Content from brands	19	7.16	5.63	1	20
SNS total years	Friends and family	168	12.82	4.5	3	22

		f	*M*	*SD*	Min.	Max.
	Entertainment (i.e., movies, gaming, series, music)	98	12.18	4.51	3	21
	News	82	11.99	3.99	4	20
	Influencer and celebrity	24	12.67	4.78	3	20
	Other	23	12.7	4.62	5	20
	Content from brands	19	12.89	3.89	5	20

Note. $N = 414$.

Figure 24

Mean Distribution of Predictor/Response Variables by Connections

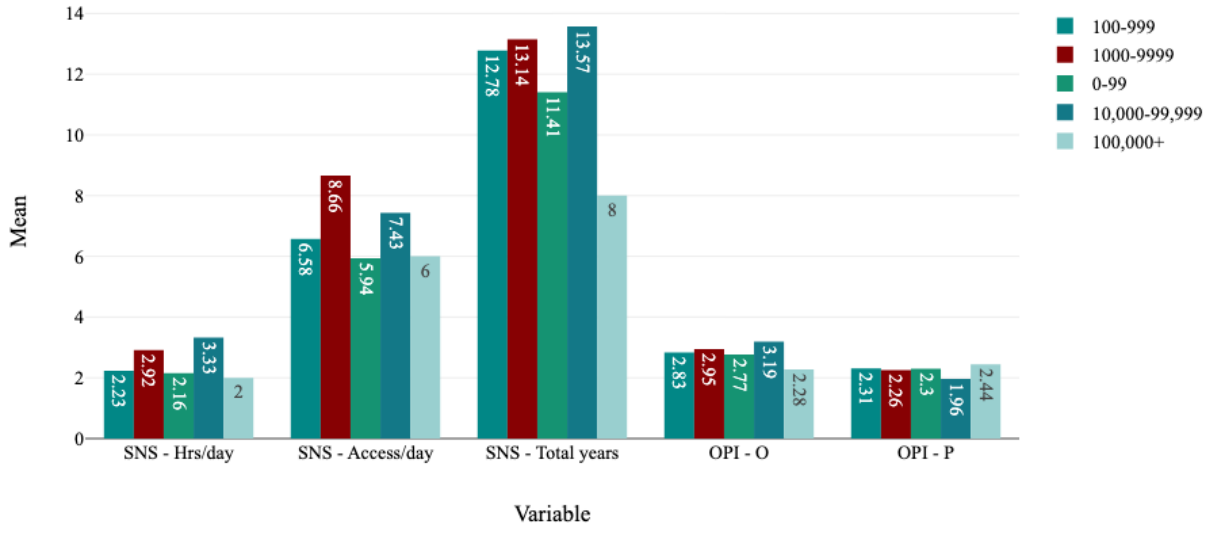


Figure 24 and Table 21 exhibit a number of interesting patterns in the data. As the number of connections increase, so does mean OPI-O, with the exception that there is a large drop-off at 150,000+ connections, although there was only one participant in the category. A similar but converse pattern can be seen with OPI-P, where mean OPI-P decreases with an increase in connections, with the exception that it starkly increases with 150,000+ connections and remains approximately similar between the 0–99 and 100–999 categories. The connection category with the highest mean OPI-O was 10,000–99,999 connections, with a mean of 3.19, *SD* = 0.32, while the lowest was 100,000+, with a mean of 2.28, *SD* = NaN. The connection

category with the highest OPI-P was 100,000+, with a mean of 2.44, *SD* = NaN, while 10,000–99,999 connections had the lowest mean OPI-P of 1.96, *SD* = 0.33. People with 10,000–99,999 connections spend the most hours per day on SNSs, with a mean of 3.33 hours, *SD* = 1.5, while people with 100,000+ spend the least amount of time on SNSs, with a mean of 2, *SD* = NaN. On average, people with 1,000–9,999 connections access SNSs the most times per day, with a mean of 8.66, *SD* = 6.19, while people with 0–99 connections access SNSs the least, with a mean of 5.94, *SD* = 4.62. On average, people with 10,000–99,999 connections have been using SNSs the longest, with a mean total years of 13.57, *SD* = 2.99, while people with 100,000+ connections have used SNSs the least longest, with a mean of 8, *SD* = NaN.

Table 21

Distribution of SNS Use and OPI Mean Scores by Total SNS Connections

		f	*M*	*SD*	Min.	Max.
OPI-O	100–999	213	2.83	0.37	1.94	3.72
	0–99	110	2.77	0.37	2	3.72
	1,000–9,999	83	2.95	0.37	2.17	3.72
	10,000–99,999	7	3.19	0.32	2.78	3.61
	100,000+	1	2.28	NaN	2.28	2.28
OPI-P	100–999	213	2.31	0.46	1.33	3.44
	0–99	110	2.3	0.39	1.39	3.44
	1,000–9,999	83	2.26	0.48	1.39	3.28
	10,000–99,999	7	1.96	0.33	1.28	2.22
	100,000+	1	2.44	NaN	2.44	2.44
SNS hr/day	100–999	213	2.23	1.32	0.25	6
	0–99	110	2.16	1.36	0.5	5
	1,000–9,999	83	2.92	1.5	1	6
	10,000–99,999	7	3.33	1.5	0.3	5
	100,000+	1	2	NaN	2	2
SNS access/day	100–999	213	6.58	4.31	1	20
	0–99	110	5.94	4.62	1	20

		f	*M*	*SD*	Min.	Max.
	1,000–9,999	83	8.66	6.19	1	20
	10,000–99,999	7	7.43	4.58	1	15
	100,000+	1	6	NaN	6	6
SNS total years	100–999	213	12.78	4.25	3	20
	0–99	110	11.41	4.51	3	21
	1,000–9,999	83	13.14	4.48	4	22
	10,000–99,999	7	13.57	2.99	10	18
	100,000+	1	8	NaN	8	8

Note. $N = 414$.

Results

Stepwise Multiple Regression

H1A – Model 1 – Optimism

Laerd (2013) explained that a Pearson correlation (shown in Table 22) is used to determine the strength and direction of a linear relationship between two continuous variables. The resulting metric of this test is a number called the correlation coefficient, also known as *R* or *r*, which is a measure of the strength and direction of a linear relationship. The value of this metric ranges from −1 to 1, where −1 is a perfect negative linear correlation and 1 is a perfect positive correlation (Laerd, 2013). Further, a result of 0 indicates that there is no relationship between the two variables. The *p*-value or significance determines the statistical significance of the linear relationship. An inspection of the correlations in Table 22 shows that there are a number of statistically significant findings. There is a moderate positive linear relationship between SNS hr/day and OPI-O, with a coefficient of .15, $p < .05$ (Cohen, 1992). There is also a moderate positive linear relationship between SNS access/day and SNS hr/day, with a coefficient of .41, $p < .05$ (Cohen, 1992). And there is a low positive linear correlation between SNS total years and SNS access/day, with a coefficient of .12, $p < .05$ (Cohen, 1992).

Table 22

H1A – Correlations – OPI-O

		OPI-O	SNS hr/day	SNS access/day	SNS total years
Pearson correlation	OPI-O	1.000	.151	−.009	−.047
	SNS hr/day	.151	1.000	.411	−.064
	SNS access/day	−.009	.411	1.000	.115
	SNS total years	−.047	−.064	.115	1.000
p (one-tailed)	OPI-O	.	.001	.430	.169
	SNS hr/day	.001	.	.000	.098
	SNS access/day	.430	.000	.	.009
	SNS total years	.169	.098	.009	.
N	OPI-O	414	414	414	414
	SNS hr/day	414	414	414	414
	SNS access/day	414	414	414	414
	SNS total years	414	414	414	414

According to Senne (2022), there a number of ways to test for whether or not a regression model fits the data: (a) an inspection of the correlation coefficient, (b) an inspection of the proportion of variance explained by the predictor, (c) the significance of the overall model, and (d) the precision of the predictions of the regression model. An inspection of the regression model summary in Table 23 shows that the strength of the linear association is low, based on Cohen's classification system, with an R of 0.151 (Cohen, 1992). The resulting adjusted R^2, which is a measure of the proportion of the variance in the dependent variable that can be explained by the predictor variable, was .021, which is a low effect size according to Cohen's

classification system, (Senne, 2022; Cohen, 1992). This means that 2.1% of the variability in the dependent variable is explained by the predictor variable.

Table 23

H1A – Model Summary[b] – OPI-O

Model	*R*	R^2	Adjusted R^2	Estimate *SE*	*F*	*df*1	*df*2	*p*	Durbin-Watson
1	.151[a]	.023	.021	0.37190	9.650	1	412	.002*	1.884

[a] Predictors: (constant), SNS hr/day. [b] Dependent variable: OPI-O.

*$p < .05$. **$p < .10$. ***$p < .001$.

SPSS v29 was used to conduct an ANOVA for determining the statistical significance of the overall model as seen in Table 24. The results of the ANOVA demonstrated that SNS hr/day statistically significantly predicted OPI-O, $F(1, 412) = 9.650$, $p < .002$. The results of the ANOVA output demonstrated that the addition of the predictor variable led to a model that (a) is better at predicting the response variable than the mean model, and (b) is a statistically significantly better fit to the data than the mean model (Senne, 2022).

Table 24

H1A – ANOVA[a] – OPI-O

Model		*SS*	*df*	*MS*	*F*	*p*
1	Regression	1.335	1	1.335	9.650	.002[b*]
	Residual	56.984	412	.138		
	Total	58.319	413			

[a] Dependent variable: OPI-O. [b] Predictors: (constant), SNS hr/day.

*$p < .05$. **$p < .10$. ***$p < .001$.

Senne (2022) explained that the slope coefficient shows the change in the response variable for every 1-unit change in the predictor variable. An inspection of the coefficients in Table 25 shows that an in increase in SNS hr/day of 1 would result in a 0.041 increase in OPI-O.

The fitted model for representing the regression equation predicting the value of OPI-O based on SNS hr/day is the following:

$$\text{Predicted } Y_{\text{OPI-O}} = (2.749) + (0.041 \times B1_{\text{SNS hr/day}}) + \varepsilon$$

Table 25

H1A – Coefficients – OPI-O

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.749	.036		76.498	<.001	2.678	2.819
	SNS - Hrs/day	.041	.013	.151	3.106	.002	.015	.066

When checking for multicollinearity, Laerd (2013) stated that an inspection of the correlations matrix should not have a value above 0.7. And an inspection of Table 22 demonstrates that there are no correlations at or above this threshold. Further, researchers must inspect collinearity statistics, which include tolerance and VIF values and are displayed in Table 26. VIF is a reciprocal of tolerance, and as such, consulting either one of these is sufficient (Laerd, 2013). A threshold for determining whether there is collinearity is when tolerance values are less than 0.1 or VIF is greater than 10. The results in Table 26 show that VIF is 1 and tolerance is 1, indicating that collinearity is not present in the data.

Table 26

H1A – Partial Correlations and Collinearity Statistics

Model		Correlations			Collinearity statistics	
		Zero order	Partial	Part	Tolerance	VIF
1	SNS hr/day	.151	.151	.151	1.000	1.000

When conducting stepwise multiple linear regression, the model is iteratively constructed and tested automatically based on statistical significance of the potential explanatory variables.

Stepwise multiple regression resulted in the exclusion of two predictor variables: SNS access/day and SNS total years (Table 27). This is based on the lack of statistical significance of these predictors in the model. As such, these predictors were excluded from the model as controls were added in further hypothesis tests.

Table 27

H1A – Excluded Variables

						Collinearity Statistics		
Model		Beta In	t	Sig.	Partial Correlation	Tolerance	VIF	Minimum Tolerance
1	SNS - Access/day	-.085[b]	-1.599	.111	-.079	.831	1.203	.831
	SNS - Total years	-.038[b]	-.773	.440	-.038	.996	1.004	.996

[b]. Predictors in the Model: (Constant), SNS - Hrs/day

Figure 25, which represents the response variable OPI-O, visually demonstrates that the residuals are approximately normally distributed. Further, the mean and standard deviations should be approximately 0 and 1, respectively, and the histograms in Figure 25 verify this requirement. The normal P-P plot in Figure 26 shows that the data points are approximately aligned with the diagonal line. The results indicates support for Hypothesis 1A and a rejection of the null hypothesis.

Figure 25

H1A – Normal Curve Histogram – OPI-O

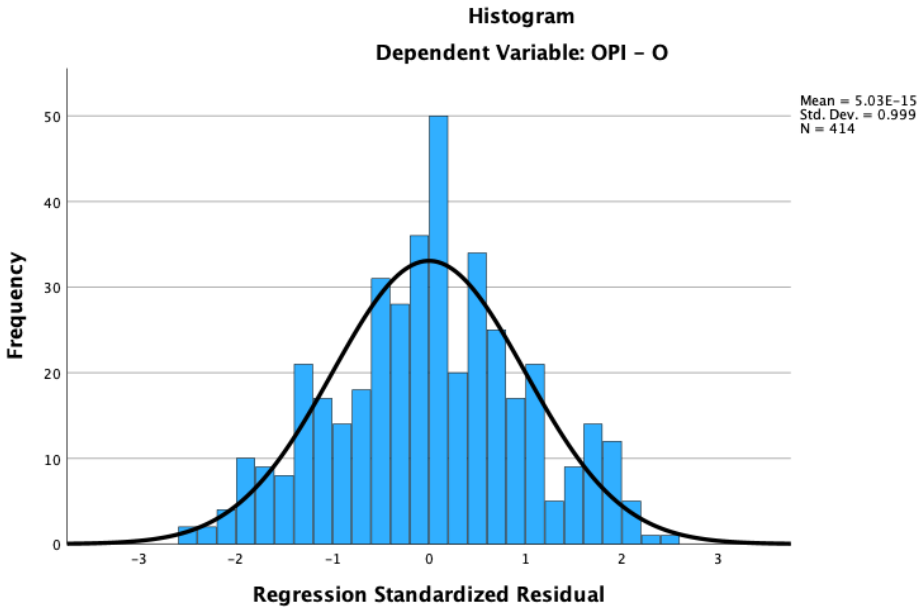
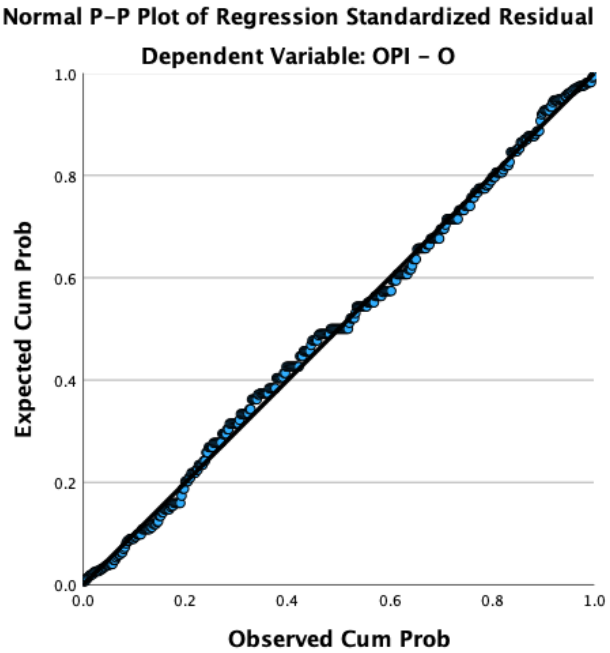


Figure 26

H1A – Normal P-P Plot – OPI-O



H1B – Model 2 – Pessimism

A Pearson correlation (shown in Table 28) is used to determine the strength and direction of a linear relationship between two continuous variables (Laerd, 2013). The resulting metric of this test is the correlation coefficient, also known as *R* or *r*, which is a measure for the strength and direction of a linear relationship. The value of this metric ranges from −1 to 1, where −1 is a perfect negative linear correlation and 1 is a perfect positive correlation (Laerd, 2013). Further, a result of 0 indicates that there is no relationship between the two variables. The *p*-value or significance determines the statistical significance of the linear relationship. Table 28 shows that there are a number of statistically significant correlations. There is a low positive linear relationship between SNS hr/day and OPI-P, with a coefficient of .15, $p < .05$ (Cohen, 1992). And there is a moderate positive linear relationship between SNS access/day and SNS hr/day, with a coefficient of .41, $p < .05$ (Cohen, 1992). There is also a low positive linear correlation between SNS total years and SNS access/day, with a coefficient of .12, $p < .05$ (Cohen, 1992), and a low positive linear correlation between SNS access/day and OPI-P, with a coefficient of .093, $p < .05$.

Table 28

H1B – Correlations – OPI-P

		OPI-P	SNS hr/day	SNS access/day	SNS total years
Pearson correlation	OPI-P	1.000	.146	.093	−.055
	SNS hr/day	.146	1.000	.411	−.064
	SNS access/day	.093	.411	1.000	.115
	SNS total years	−.055	−.064	.115	1.000
p (one-tailed)	OPI-P	.	.001	.029	.134

		OPI-P	SNS hr/day	SNS access/day	SNS total years
	SNS hr/day	.001	.	.000	.098
	SNS access/day	.029	.000	.	.009
	SNS total years	.134	.098	.009	.
N	OPI-P	414	414	414	414
	SNS hr/day	414	414	414	414
	SNS access/day	414	414	414	414
	SNS total years	414	414	414	414

Senne (2022) noted that there are a number of ways to test for whether or not a regression model fits the data: (a) an inspection of the correlation coefficient, (b) an inspection of the proportion of variance explained by the predictor, (c) the significance of the overall model, and (d) the precision of the predictions of the regression model. An inspection of the regression model summary in Table 29 shows that the strength of the linear association is low based on Cohen's classification system, with an *R* of .146 (Cohen, 1992). The resulting adjusted R^2, which is a measure of the proportion of the variance in the dependent variable being explained by the predictor variable, was .019, which is a low effect size according to Cohen's classification system (Cohen, 1992; Senne, 2022). This means that 1.9% of the variability in the dependent variable is explained by the predictor variable.

Table 29

H1B – Model Summary[b] – OPI-P

Model	*R*	R^2	Adjusted R^2	Estimate *SE*	*F*	*df1*	*df2*	*p*	Durbin-Watson
1	.146[a]	.021	.019	0.43983	8.963	1	412	.003*	1.989

[a] Predictors: (constant), SNS hr/day. [b] Dependent variable: OPI-P.

*$p < .05$. **$p < .10$. ***$p < .001$.

SPSS v29 was used to conduct an ANOVA to determine the statistical significance of the overall model (Table 30). The results of the ANOVA show that SNS hr/day statistically significantly predicted OPI-P, $F(1, 412) = 8.963$, $p < .05$. The results of the ANOVA output demonstrated that the addition of the predictor variable led to a model that (a) is better at predicting the response variable than the mean model and (b) is a statistically significantly better fit to the data than the mean model (Senne, 2022).

Table 30

H1B – ANOVA[a] – OPI-P

Model		*SS*	*df*	*MS*	*F*	*p*
1	Regression	1.734	1	1.734	8.963	.003[b*]
	Residual	79.702	412	.193		
	Total	81.436	413			

[a] Dependent variable: OPI-P. [b] Predictors: (constant), SNS hr/day.

*$p < .05$. **$p < .10$. ***$p < .001$.

The slope coefficient shows the change in the response variable for every one-unit change in the predictor variable (Senne, 2022). The coefficients in Table 25 show that an increase in SNS hr/day of 1 would result in a 0.046 increase in OPI-P. The fitted model for representing the regression equation predicting the value of OPI-P based on SNS hr/day is the following:

$$\text{Predicted } Y_{\text{OPI-P}} = (2.184) + (0.046 \times B1_{\text{SNS hr/day}}) + \varepsilon$$

Table 31

H1B – Coefficients – OPI-P

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.184	.042		51.385	<.001	2.100	2.267
	SNS - Hrs/day	.046	.015	.146	2.994	.003	.016	.077

When checking for multicollinearity, Laerd (2013) pointed out that the correlations matrix should not have a value above .7. Table 28 shows that there are no correlations at or above this threshold. Also, researchers must inspect collinearity statistics, which contain tolerance and VIF values, displayed in Table 32. According to Laerd (2013), VIF is a reciprocal of tolerance, and as such, consulting either of these measures is sufficient. A threshold for determining there is collinearity is reached when tolerance values are less than .1 or VIF is greater than 10. The results in Table 32 show that VIF is 1 and tolerance is 1, indicating that collinearity is not present in the data.

Table 32

H1B – Partial Correlations and Collinearity Statistics – OPI-P

Model		Correlations			Collinearity statistics	
		Zero order	Partial	Part	Tolerance	VIF
1	SNS hr/day	.146	.146	.146	1.000	1.000

When conducting stepwise multiple linear regression, the model is iteratively constructed and tested automatically based on the statistical significance of the potential explanatory variables. Stepwise multiple regression resulted in the exclusion of two predictor variables, as shown in Table 33: SNS access/day and SNS total years. This is based on the lack of statistical

significance of these predictors in the model. As such, these predictors were excluded from the model as controls were added in further hypothesis tests.

Table 33

H1B – Excluded Variables – OPI-P

						Collinearity Statistics		
Model		Beta In	t	Sig.	Partial Correlation	Tolerance	VIF	Minimum Tolerance
1	SNS - Access/day	.040[b]	.752	.452	.037	.831	1.203	.831
	SNS - Total years	-.045[b]	-.931	.352	-.046	.996	1.004	.996

[b]. Predictors in the Model: (Constant), SNS - Hrs/day

The histogram in Figure 27 represents the response variable OPI-P and illustrates that the residuals are approximately normally distributed. Further, the mean and standard deviations should be approximately 0 and 1, respectively, and the histograms in Figure 27 verifies this requirement. And the normal P-P plot in Figure 28 shows that the data points are approximately aligned with the diagonal line. These results indicate support for Hypothesis 1B a rejection of the null hypothesis.

Figure 27

H1B – Normal Curve Histogram – OPI-P

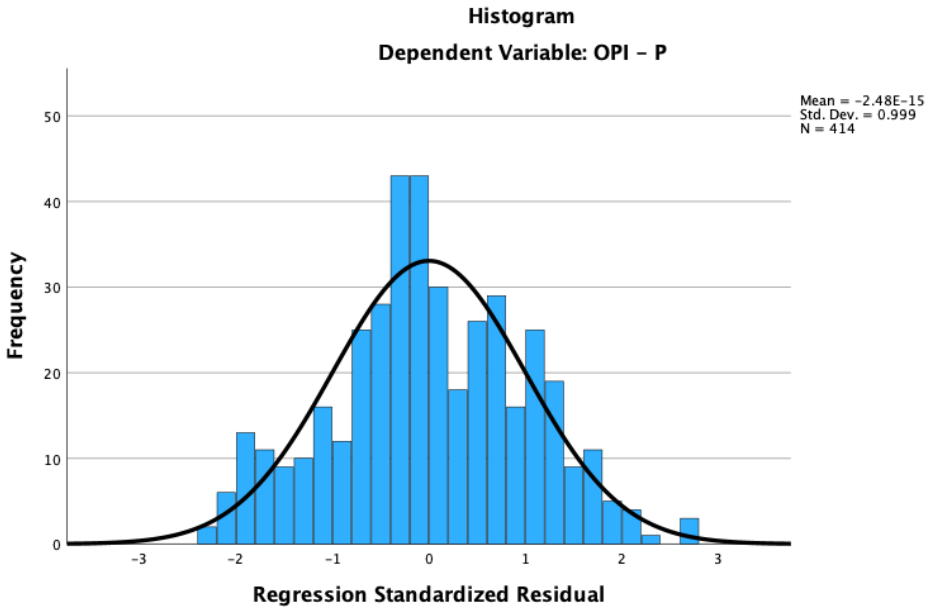
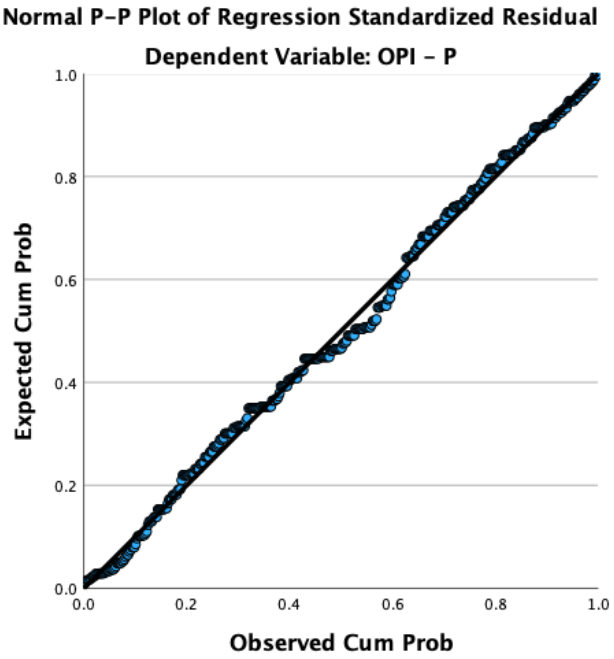


Figure 28

H1B – Normal P-P Plot – OPI-P



ANOVA for Testing Multicategorical Controls (*F*-Test)

For the purpose of building a parsimonious regression model for testing the effects of the demographic controls on the relationship and significance between degree of SNS use and optimism/pessimism mean scores, a series of individual ANOVAs were conducted for each categorical control variable and each dependent variable (i.e., OPI-O and OPI-P). Typically, the ANOVA, specifically the one-way ANOVA, is a test used for determining if there are any statistically significant differences between the means of two or more independent groups. This test is also used when there is a categorical variable with two or more groups, although a *t*-test is typically used for categorical variables with two groups. Another purpose of the ANOVA is as an *F*-test that measures the significance of the overall predictor variable with the response variable. Due to the nature of the control variables being polytomous categorical or nominal variables, ANOVA was used to determine the statistical significance of each individual control with the dependent variable. The results of these ANOVAs are summarized in Table 34 for OPI-O and Table 35 for OPI-P.

Table 34

ANOVA Summary[h] *– OPI-O to Test Demographic Controls (F-Test)*

Model/group		*SS*	*df*	*MS*	*F*	*p*
1. Gender[a]	Regression	.122	1	.122	.866	.353
	Residual	58.197	412	.141		
	Total	58.319	413			
2. Race[b]	Regression	1.215	5	.243	1.737	.125
	Residual	57.104	408	.140		
	Total	58.319	413			
3. Education[c]	Regression	2.539	8	.317	2.304	.020*
	Residual	55.780	405	.138		
	Total	58.319	413			
4. Age[d]	Regression	.592	6	.099	.696	.653
	Residual	57.727	407	.142		
	Total	58.319	413			
5. Employment[e]	Regression	2.776	6	.463	3.391	.003*
	Residual	55.543	407	.136		

Model/group		*SS*	*df*	*MS*	*F*	*p*
	Total	58.319	413			
6. Income[f]	Regression	.993	5	.199	1.414	.218
	Residual	57.326	408	.141		
	Total	58.319	413			
7. Relationship[g]	Regression	1.811	5	.362	2.616	.024*
	Residual	56.508	408	.138		
	Total	58.319	413			

[a] Predictors: (constant), gender – female. [b] Predictors: (constant), race – Amer. Indian, race – other, race – Hispanic, race – Asian, race – Black. [c] Predictors: (constant), ED – other, ED – doctorate, ED – professional degree, ED – trade/technical/vocational, ED – HS graduate, ED – master's degree, ED – associate degree, ED – some college/no degree. [d] Predictors: (constant), age: 75+, age: 65–74, age: 18–24, age: 55–64, age: 45–54, age: 25–34. [e] Predictors: (constant), unable to work, student, homemaker, retired, out of work and looking for work, self-employed. [f] Predictors: (constant), $0–$19,999, $130,000–$149,000, $150,000+, $90,000–$129,000, $20,000–$49,999. [g] Predictors: (constant), other relationship, separated, widowed, divorced, single, never married. [h] Dependent variable: OPI-O.

*$p < .05$. **$p < .10$. ***$p < .001$.

Tables 34 and 35 display some interesting results. For the response variable OPI-O, there were three statistically significant demographic control variables: education, $F(8, 405) = 2.304$, $p < .05$, employment, $F(6, 407) = 3.391$, $p < .05$, and relationship, $F(5, 408) = 2.616$, $p < .05$. For the response variable OPI-P, there was only one statistically significant demographic control variable: age, $F(6, 407) = 2.986$, $p < .05$.

Table 35

ANOVA Summary[h] – OPI-P to Test Demographic Controls (F-Test)

Model/group		*SS*	*df*	*MS*	*F*	*p*
1. Gender[a]	Regression	.186	1	.186	.942	.332
	Residual	81.250	412	.197		
	Total	81.436	413			
2. Race[b]	Regression	.828	5	.166	.838	.523
	Residual	80.608	408	.198		
	Total	81.436	413			

Model/group		*SS*	*df*	*MS*	*F*	*p*
3. Education[c]	Regression	1.869	8	.234	1.189	.304
	Residual	79.567	405	.196		
	Total	81.436	413			
4. Age[d]	Regression	3.434	6	.572	2.986	.007*
	Residual	78.002	407	.192		
	Total	81.436	413			
5. Employment[e]	Regression	2.282	6	.380	1.956	.071
	Residual	79.154	407	.194		
	Total	81.436	413			
6. Income[f]	Regression	1.653	5	.331	1.691	.136
	Residual	79.782	408	.196		
	Total	81.436	413			
7. Relationship[g]	Regression	1.720	5	.344	1.760	.120
	Residual	79.716	408	.195		
	Total	81.436	413			

[a] Predictors: (constant), gender – female. [b] Predictors: (constant), race – Amer. Indian, Race – other, race – Hispanic, race – Asian, race – Black. [c] Predictors: (constant), ED – other, ED – doctorate, ED – professional degree, ED – trade/technical/vocational, ED – HS graduate, ED – master's degree, ED – associate degree, ED – some college/no degree. [d] Predictors: (constant), age: 75+, age: 65–74, age: 18–24, age: 55–64, age: 45–54, age: 25–34. [e] Predictors: (constant), unable to work, student, homemaker, retired, out of work and looking for work, self-employed. [f] Predictors: (constant), $0–$19,999, $130,000–$149,999, $150,000+, $90,000–$129,999, $20,000–$49,999. [g] Predictors: (constant), other relationship, separated, widowed, divorced, single, never married. [h] Dependent variable: OPI-P.

*$p < .05$. **$p < .10$. ***$p < .001$.

Hierarchical Regression and Controlling for Demographics

H2A – Model 3 – Optimism

Before interpreting the results of the hierarchical regression summarized in Table 36 and Table 38, it should be remembered that the results of H1A in Tables 23, 24, and 25 showed that there was a statistically significant relationship between SNS hr/day, where $R = .151$, with adjusted $R^2 = .21$, and the slope intercept was 2.749, with SNS hr/day having a B of 0.041, $p < .05$. Further, the ANOVA statistic in Table 24 was $F(1, 412) = 9.650$, $p < .05$, demonstrating the

model fits. Examining the summaries of the regression with the controls added for OPI-O in Tables 36, 37, and 38, a number of results can be observed. For Table 36, Models 1–3 show the hierarchical addition of each control, wherein the results before adding the predictor were an adjusted R^2 of .071 or 7.1% of the variance. The addition of the predictor resulted in an adjusted R^2 change of .021, or 2.1% of the variance, showing that while the controls explain more of the variance, there was no change in the power of the predictor with an adjusted R^2 = .021. Further, when controlling for demographics, the *B* of the predictor (Table 38) remained 0.41, demonstrating that when controlling for demographics, each additional hour of SNS use per day resulted in a 0.041 increase in optimism.

Table 36

H2A – Model Summary[e] – OPI-O

Model	*R*	R^2	Adjusted R^2	Estimate *SE*	R^2 change	*F* change	*df*1	*df*2	Sig. *F* change	Durbin-Watson
1	.209[a]	.044	.025	0.37112	.044	2.304	8	405	.020	
2	.303[b]	.092	.060	0.36432	.048	3.544	6	399	.002	
3	.337[c]	.114	.071	0.36223	.022	1.922	5	394	.090	
4	.369[d]	.136	.092	0.35806	.022	10.221	1	393	.002	1.974

[a] Predictors: (constant), ED – other, ED – doctorate, ED – professional degree, ED – trade/technical/vocational, ED – HS graduate, ED – master's degree, ED – associate degree, ED – some college/no degree. [b] Predictors: (constant), ED – other, ED – doctorate, ED – professional degree, ED – trade/technical/vocational, ED – HS graduate, ED – master's degree, ED – associate degree, ED – some college/no degree, student, unable to work, out of work and looking for work, homemaker, retired, self-employed. [c] Predictors: (constant), ED – Other, ED – doctorate, ED – professional degree, ED – trade/technical/vocational, ED – HS graduate, ED – master's degree, ED – associate degree, ED – some college/no degree, student, unable to work, out of work and looking for work, homemaker, retired, self-employed, other relationship, separated, divorced, widowed, single, never married. [d] Predictors: (constant), ED – other, ED – doctorate, ED – professional degree, ED – trade/technical/vocational, ED – HS graduate, ED – master's degree, ED – associate degree, ED – some college/no degree, student, unable to work, out

of work and looking for work, homemaker, retired, self-employed, other relationship, separated, divorced, widowed, single, never married, SNS hr/day. [c] Dependent variable: OPI-O.

The hierarchical ANOVA summary in Table 37 representing the different models as each additional control and predictor variable was added shows that the model maintained statistical significance as each control was added, and then in Model 4, when the predictor SNS hr/day was added, the model was significant, with $F(20, 393) = 3.094$, $p < .05$. The results of the ANOVA in Table 37 demonstrate that the overall model with controls is a good fit for the data and is significant.

Table 37

H2A – ANOVA Summary[a] – OPI-O

Model		*SS*	*df*	*MS*	*F*	*p*
1	Regression	2.539	8	.317	2.304	.020[b*]
	Residual	55.780	405	.138		
	Total	58.319	413			
2	Regression	5.361	14	.383	2.885	< .001[c***]
	Residual	52.958	399	.133		
	Total	58.319	413			
3	Regression	6.622	19	.349	2.656	< .001[d***]
	Residual	51.697	394	.131		
	Total	58.319	413			
4	Regression	7.933	20	.397	3.094	< .001[e***]
	Residual	50.386	393	.128		
	Total	58.319	413			

[a] Dependent variable: OPI-O. [b] Predictors: (constant), ED – other, ED – doctorate, ED – professional degree, ED – trade/technical/vocational, ED – HS graduate, ED – master's degree, ED – associate degree, ED – some college/no degree. [c] Predictors: (constant), ED – other, ED – doctorate, ED – professional degree, ED –

trade/technical/vocational, ED – HS graduate, ED – master's degree, ED – associate degree, ED – some college/no degree, student, unable to work, out of work and looking for work, homemaker, retired, self-employed. [d] Predictors: (constant), ED – other, ED – doctorate, ED – professional degree, ED – trade/technical/vocational, ED – HS graduate, ED – master's degree, ED – associate degree, ED – some college/no degree, student, unable to work, out of work and looking for work, homemaker, retired, self-employed, other relationship, separated, divorced, widowed, single, never married. [e] Predictors: (constant), ED – other, ED – doctorate, ED – professional degree, ED – trade/technical/vocational, ED – HS graduate, ED – master's degree, ED – associate degree, ED – some college/no degree, student, unable to work, out of work and looking for work, homemaker, retired, self-employed, other relationship, separated, divorced, widowed, single never married, SNS hr/day.

*$p < .05$. **$p < .10$. ***$p < .001$.

A number of observations follow from the coefficients in Table 38. The slope intercept of the model is 2.814, which represents the value of *Y* when *X* is 0. When inspecting the groups within each of the categories, it can be seen that ed – master's degree was statistically significant, with a *B* of 0.169, $p < .05$. This means that, based on the reference group of the category being ED – bachelor's degree, married or domestic partnership, and employed for wages, ED – master's degree is 0.169 higher in optimism with significance. Further, self-employed people were −0.161 lower in optimism than the reference category of employed for wages, with a bachelor's degree and married or domestic partnership, with significance, $p < .05$. People who are single, never married were also −.110 lower than the reference category of married or domestic partnership who are employed for wages and have a bachelor's degree, $p < .05$. Finally, SNS hr/day remained statistically significant, with a *B* of 0.041, $p < .05$.

Table 38

H2A – Standardized and Unstandardized Coefficients[ab]– OPI-O

Model	Unstandardized coefficients		Standardized coefficients	*t*	*p*
	B	*SE*	β		

4	(Constant)	2.814	0.043		65.249	< .001
	ED – some college/no degree	0.083	0.060	.073	1.389	.166
	ED – associate degree	−0.123	0.062	−.100	−1.989	.047
	ED – master's degree	0.169	0.062	.137	2.741	.006*
	ED – HS graduate	−0.004	0.063	−.003	−0.064	.949
	ED – trade/technical/vocational	0.073	0.095	.037	0.765	.445
	ED – professional degree	0.021	0.108	.010	0.199	.842
	ED – doctorate	0.023	0.115	.010	0.201	.840
	ED – other	−0.350	0.214	−.079	−1.636	.103
	Self-employed	−0.161	0.052	−.153	−3.093	.002*
	Out of work and looking for work	−0.206	0.085	−.118	−2.421	.016
	Retired	0.138	0.100	.069	1.379	.169
	Homemaker	0.018	0.113	.008	0.163	.871
	Student	−0.141	0.125	−.055	−1.129	.260
	Unable to work	0.158	0.363	.021	0.435	.664
	Single, never married	−0.110	0.039	−.142	−2.819	.005*
	Divorced	−0.119	0.078	−.076	−1.535	.126
	Widowed	−0.111	0.169	−.032	−0.658	.511
	Separated	−0.316	0.261	−.058	−1.212	.226
	Other relationship	0.002	0.359	.000	0.006	.995
	SNS hr/day	0.041	0.013	.154	3.197	.002*

[a] Dependent variable: OPI-O. [b] Reference categories = ED – bachelor's degree, employed for wages, married or domestic partnership.

*$p < .05$. **$p < .10$. ***$p < .001$.

The following is the fitted model for the regression equation predicting the value of OPI-P based on SNS hr/day when controlling for significant demographics:

$$\text{Predicted } Y_{\text{OPI-O}} = (2.81423) + (0.08273 \times B1_{\text{ED – some college/no degree}}) - (0.12341 \times B1_{\text{ED – associate degree}}) + (0.16880 \times B1_{\text{ED – master's degree}}) - (0.00406 \times B1_{\text{ED – HS graduate}}) + (0.07281 \times B1_{\text{ED –}}$$

$_{\text{trade/technical/vocational}}) + (0.02144 \times B1_{\text{ED – professional degree}}) + (0.02325 \times B1_{\text{ED – doctorate}}) – (0.35037 \times B1_{\text{ED – other}}) – (0.16134 \times B2_{\text{Self-employed}}) – (0.20615 \times B2_{\text{Out of work and looking for work}}) + (0.13812 \times B2_{\text{Retired}}) + (0.01839 \times B2_{\text{Homemaker}}) – (0.14072 \times B2_{\text{Student}}) + (0.15794 \times B2_{\text{Unable to work}}) – (0.10972 \times B3_{\text{Single, never married}}) – (0.11938 \times B3_{\text{Divorced}}) – (0.11149 \times B3_{\text{Widowed}}) – (0.31627 \times B3_{\text{Separated}}) + (0.00204 \times B3_{\text{Other relationship}}) + (0.04124 \times B4_{\text{SNS hr/day}}) + \varepsilon$

Table 39

H2A – Coefficients[ab] – Partial Correlations and Collinearity Statistics – OPI-O

Model		Correlations			Collinearity statistics	
		Zero order	Partial	Part	Tolerance	VIF
4	ED – some college/no degree	−.002	.070	.065	.795	1.259
	ED – associate degree	−.124	−.100	−.093	.864	1.157
	ED – master's degree	.148	.137	.129	.877	1.140
	ED – HS graduate	−.041	−.003	−.003	.893	1.120
	ED – trade/technical/vocational	.018	.039	.036	.920	1.087
	ED – professional degree	.002	.010	.009	.949	1.054
	ED – doctorate	.031	.010	.009	.899	1.112
	ED – other	−.087	−.082	−.077	.939	1.065
	Self-employed	−.164	−.154	−.145	.894	1.119
	Out of work and looking for work	−.094	−.121	−.114	.929	1.076
	Retired	.088	.069	.065	.884	1.131
	Homemaker	.017	.008	.008	.937	1.068
	Student	−.051	−.057	−.053	.938	1.067
	Unable to work	.006	.022	.020	.974	1.027
	Single, never married	−.146	−.141	−.132	.866	1.154
	Divorced	−.046	−.077	−.072	.902	1.108
	Widowed	−.026	−.033	−.031	.904	1.106
	Separated	−.033	−.061	−.057	.946	1.057

Other relationship	.012	.000	.000	.995	1.005
SNS hr/day	.151	.159	.150	.953	1.050

[a] Dependent variable: OPI-O. [b] Reference categories = ED – bachelor's degree, employed for wages, married or domestic partnership.

The histogram in Figure 29, which represents the response variable OPI-O, visually demonstrates that the residuals appear to be approximately normally distributed. Further, the mean and standard deviations should be approximately 0 and 1, respectively, and an inspection of the histograms in Figure 29 verifies this requirement. The normal P-P plot in Figure 30 shows that the data points are approximately aligned with the diagonal line. Thus, the results support Hypothesis 2A, and the null hypothesis is rejected.

Figure 29

H2A – Normal Curve Histogram – OPI-O

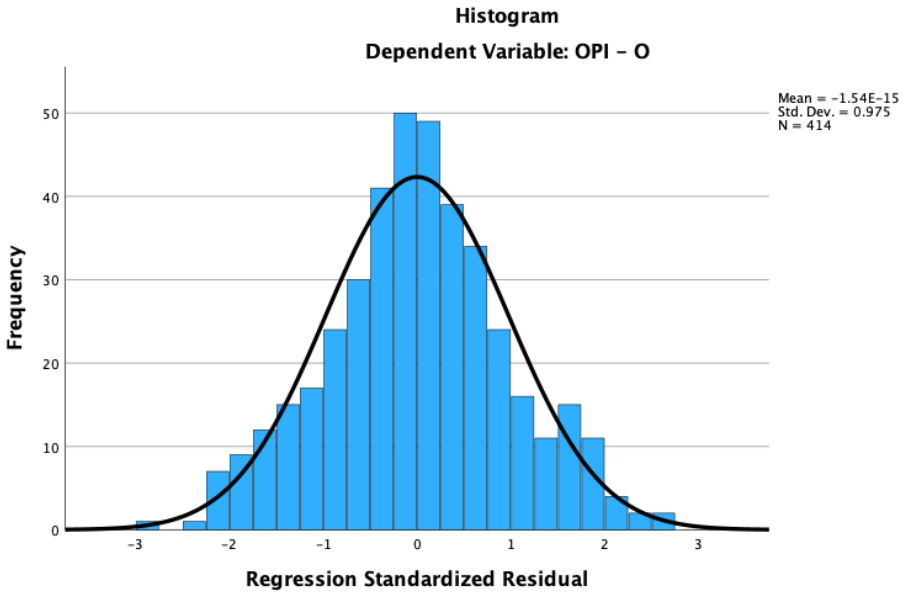
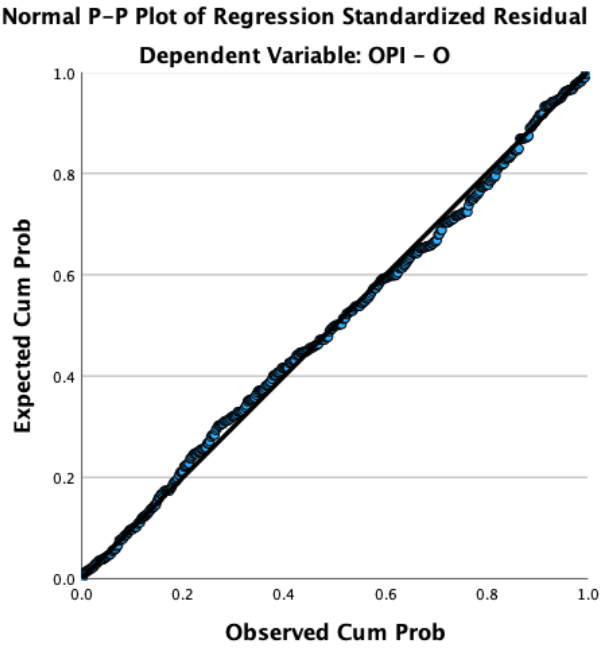


Figure 30

H2A – Normal P-P Plot – OPI-O



H2B – Model 4 – Pessimism

Before examining the results of the hierarchical regression summarized in Tabled 40 and 41, it should be remembered that the results of H1B in Tables 29, 30, and 31 indicated there is a statistically significant relationship between SNS hr/day, where R = .146 with an adjusted R^2 = .019, and the slope intercept was 2.184, with SNS hr/day having a B of 0.046, $p < .05$. Further, the ANOVA in Table 30 is $F(1, 412) = 8.963$, $p < .05$, demonstrating the model is a fit for the data.

Examining the summaries of the regression with the controls added for OPI-P in Tables 40, 41, and 42, a number of results can be observed. For Table 40, Model 1 shows the hierarchical addition of the control, and the results before adding the predictor were an adjusted R^2 of .028, or 2.8% of the variance. The addition of the predictor resulted in an adjusted R^2 change of .008, or 0.8% of the variance, showing that the control explains more of the variance

in the dependent variable than the predictor. There was also a change in the power of the predictor, with an adjusted R^2 = .008 from .019 in the model without controls. This is a decrease of 58% in the explanatory power of the predictor when adding the control group of age. Further, when controlling for demographics, the *B* of the predictor (Table 42) changed to 0.034 (with controls) from 0.046 (without controls), which is a decrease in *B* of 0.012. This demonstrates that when controlling for demographics, each additional hour of SNS use per day resulted in a 0.034 increase in pessimism. While the addition of controls weakened the explanatory power of the predictor and reduced the effect of the *B*, the effect was still significant at $p < .05$.

Table 40

H2B – Model Summary[c] – OPI-P

Model	*R*	R^2	Adjusted R^2	Estimate *SE*	R^2 change	*F* change	*df*1	*df*2	Sig. *F* change	Durbin-Watson
1	.205[a]	.042	.028	0.43778	.042	2.986	6	407	.007	
2	.229[b]	.053	.036	0.43592	.010	4.482	1	406	.035	1.951

[a] Predictors: (constant), age: 75+, age: 65–74, age: 18–24, age: 55–64, age: 45–54, age: 25–34. [b] Predictors: (constant), age: 75+, age: 65–74, age: 18–24, age: 55–64, age: 45–54, age: 25–34, SNS hr/day. [c] Dependent variable: OPI-P.

The hierarchical ANOVA summary in Table 41 represents the different models as the control and predictor variable were added. It shows that the model maintained statistical significance as the control was added, and in Model 2 when the predictor SNS hr/day was added, the model was significant, with $F(7, 406) = 3.222$, $p < .05$. The results of the ANOVA in Table 41 demonstrate that the overall model with controls is a good fit for the data and is significant overall.

Table 41

H2B – ANOVA Summary[a] – OPI-P

Model		*SS*	*df*	*MS*	F	*p*
1	Regression	3.434	6	.572	2.986	.007[b*]
	Residual	78.002	407	.192		
	Total	81.436	413			
2	Regression	4.285	7	.612	3.222	.002[c*]
	Residual	77.150	406	.190		
	Total	81.436	413			

[a] Dependent variable: OPI-P. [b] Predictors: (constant), age: 75+, age: 65–74, age: 18–24, age: 55–64, age: 45–54, age: 25–35. [c] Predictors: (constant), age: 75+, age: 65–74, age: 18–24, age: 55–64, age: 45–54, age: 25–34, SNS hr/day.

*$p < .05$. **$p < .10$. ***$p < .001$.

Inspecting the resulting coefficients in Table 42, a number of observations can be made. The slope intercept of the model is 2.250, which represents the value of *Y* when *X* is 0. For groups within each of the categories, the age: 65–74 group was statistically significant, with a *B* of −0.264, $p < .05$. This mean that based on a category reference group of age: 35–44, age: 65–74 is 0.264 lower in pessimism with significance. It can also be observed that SNS hr/day remained statistically significant, with a *B* of 0.034, $p < .05$.

Table 42

H2B – Unstandardized and Standardized Coefficients[a] – OPI-P

		Unstandardized coefficients		Standardized coefficients		
Model		B	*SE*	β	*t*	*p*
2	(Constant)	2.250	0.053		42.258	< .001
	Age: 25–34	0.003	0.056	.003	0.050	.960

	Age: 45–54	−0.083	0.062	−.074	−1.338	.182
	Age: 55–64	−0.149	0.076	−.103	−1.944	.053
	Age: 18–24	0.121	0.097	.064	1.246	.214
	Age: 65–74	−0.264	0.113	−.118	−2.348	.019*
	Age: 75+	−0.393	0.438	−.044	−0.897	.370
	SNS hr/day	0.034	0.016	.106	2.117	.035*

[a] Dependent variable: OPI-P. [b] Reference category = age: 35–44.

*$p < .05$. **$p < .10$. ***$p < .001$.

The following is the fitted model for the regression equation predicting the value of OPI-P based on SNS hr/day when controlling for demographics:

$$\text{Predicted } Y_{\text{OPI-P}} = (2.24952) + (0.00280 \times B1_{\text{Age: 25–34}}) - (0.08270 \times B1_{\text{Age: 45–54}}) - (0.14853 \times B1_{\text{Age: 55–64}}) + (0.12128 \times B1_{\text{Age: 18–24}}) - (0.26420 \times B1_{\text{Age: 65–74}}) - (0.39304 \times B1_{\text{Age: 75+}}) + (0.03353 \times B2_{\text{SNS hr/day}}) + \varepsilon$$

Table 43

H2B – Coefficients[a] – Partial Correlations and Collinearity Statistics – OPI-P

		Correlations			Collinearity statistics	
Model		Zero order	Partial	Part	Tolerance	VIF
2	Age: 25–34	.069	.002	.002	.736	1.359
	Age: 45–54	−.061	−.066	−.065	.771	1.297
	Age: 55–64	−.103	−.096	−.094	.828	1.208
	Age: 18–24	.101	.062	.060	.887	1.127
	Age: 65–74	−.114	−.116	−.113	.921	1.086
	Age: 75+	−.045	−.044	−.043	.993	1.008
	SNS hr/day	.146	.104	.102	.937	1.067

[a] Dependent Variable: OPI-P.

Figure 31, which represents the response variable OPI-P, illustrates that the residuals appear to be approximately normally distributed. Further, the mean and standard deviations should be approximately 0 and 1, respectively, and an inspection of the histograms in Figure 31 verifies this requirement. The normal P-P plot in Figure 32 shows that the data points are

approximately aligned with the diagonal line. The results indicate support for Hypothesis 2B, and the null hypothesis is rejected.

Figure 31

H2B – Normal Curve Histogram – OPI-P

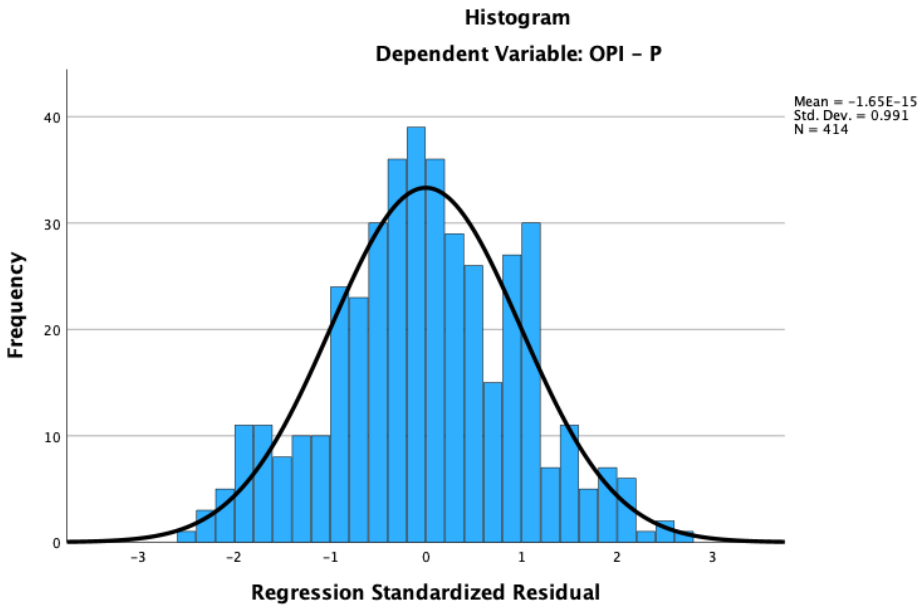
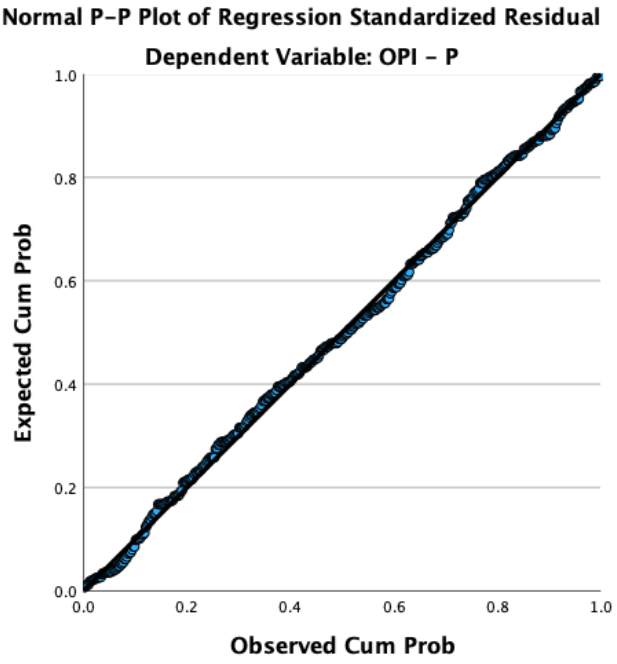


Figure 32

H2B – Normal P-P Plot – OPI-P



SPSS PROCESS Moderation Analysis for Main Platform, Main Content, Connections

H3A – PROCESS v4.3 Hayes SPSS – Platform and OPI-O

Moderating analyses were conducted using the Process v4.3 Hayes macro for SPSS v29 to determine the moderating role of main SNS platform on the relationship between degree of SNS use measured in hours per day used and OPI-O. The test of unconditional interaction showed that the relationship between SNS hr/day and OPI-O was not significantly moderated by main platform based on p > .05. However, main platform statistically significantly moderates the relationship between SNS hr/day and OPI-O at the 90% confidence interval, with $p = .0631$, which is $p < .10$. With Facebook as the reference group for the model, the results showed that the other platform group had a significantly lower OPI-O than Facebook, with a B of −0.0234, $p < .05$. Further, Twitter had a significant interaction effect, showing that the effect on optimism is higher than all other platforms, with $B = 0.0783$, $p < .05$. While main platform is not a significant

moderator, there is a significant interaction with Twitter, which is known as a crossover interaction. The results do not support Hypothesis 3A, and the null hypothesis cannot be rejected.

Table 44

H3A – SPSS PROCESS Moderation Output – Platform and OPI-O

Model Summary[a]

R	R^2	*MSE*	*F*	*df*1	*df*2	*p*
.2891	.0836	0.1335	3.3152	11	400	.0002*

Coefficients

Model	Coefficient	*SE*	*t*	*p*	95% CI *LL*	95% CI *UL*
Constant[a]	2.902	0.0309	93.8458	.0000	2.8412	2.9628
SNSHRDAY	0.029	0.0219	1.3232	.1865	−0.0141	0.0722
W1 – Twitter	−0.0772	0.049	−1.5759	.1158	−0.1735	0.0191
W2 – Instagram	−0.0234	0.0516	−0.4544	.6498	−0.1248	0.0779
W3 – Other	−0.2388	0.0587	−4.0658	.0001***	−0.3543	−0.1233
W4 – Tik Tok	−0.0231	0.0727	−0.3175	.7511	−0.166	0.1199
W5 – LinkedIn	−0.0239	0.1653	−0.1446	.8851	−0.3488	0.301
Int_1 – Twitter	0.0783	0.0362	2.1618	.0312*	0.0071	0.1495
Int_2 – Instagram	0.0121	0.0366	0.3309	.7409	−0.0599	0.0842
Int_3 – Other	−0.0577	0.0425	−1.355	01762	−0.1413	0.026
Int_4 – Tik Tok	−0.0371	0.0473	−0.783	.4341	−0.1301	0.056
Int_5 – LinkedIn	0.0378	0.1256	0.3007	.7638	−0.2092	0.2848

Test(s) of Highest Order Unconditional Interaction(s)

	R^2 change	*F*	*df*1	*df*2	*p*
X*W	.0242	2.1121	5	400	.0631**

Note. Y = OPI-O, X = SNS hr/day, W = Main platform, *N* = 412, Excluded variable(s) = Snap.

[a] Reference category = Facebook.

*$p < .05$. **$p < .10$. ***$p < .001$.

H3B – PROCESS v4.3 Hayes SPSS – Content and OPI-O

When testing the moderating effects of main content on the relationship between SNS hr/day and OPI-O, the test of unconditional interaction showed that the relationship between SNS hr/day and OPI-O was not significantly moderated by main content based on $p > .05$. Based on friends and family content as the reference group for the model, the results showed that entertainment content, influencer content, and other content had a significantly lower OPI-O than friends and family content. Entertainment had the lowest OPI-O compared to friends and family content, with $B = -0.2325$, $p < .05$, while other content was higher than entertainment with significance but lower than friends and family, with $B = -0.2065$, $p < .05$. Further, influencer content had lower OPI-O than friends and family but higher than entertainment and other content, with $B = -0.1871$, $p < .05$. There were no significant interactions at $p < .05$; however, other content had a significant crossover interaction at the 90% confidence interval or $p < .10$. The results do not support Hypothesis 3B, and the null hypothesis cannot be rejected.

Table 45

H3B – SPSS PROCESS Moderation Output – Content and OPI-O

Model Summary[a]

R	R^2	*MSE*	*F*	*df*1	*df*2	*p*
.3067	.0941	0.1314	3.795	11	402	.000***

Coefficients

Model	Coefficient	*SE*	*t*	*p*	95% CI *LL*	95% CI *UL*
Constant	2.9349	0.0281	104.3353	.0000	2.8796	2.9902
SNSHRDAY	0.0448	0.0208	2.1481	.0323*	0.0038	0.0857
W1 – Entertainment	−0.2325	0.0476	−4.8857	.0000***	−0.3261	−0.139
W2 – News	−0.0726	0.0496	−1.465	.1437	−0.17	0.0248
W3 – Influencer	−0.1871	0.0807	−2.3176	.021*	−0.3458	−0.0284
W4 – Other	−0.2065	0.083	−2.4883	.0132*	−0.3696	−0.0434

W5 – Brand	−0.0551	0.0878	−0.6278	.5305	−0.2278	0.1175
Int_1 – Entertainment	0.0262	0.0321	0.8159	.415	−0.0369	0.0894
Int_2 – News	0.0188	0.0374	0.5043	.6144	−0.0546	0.0923
Int_3 – Influencer	0.0006	0.0642	0.0093	.9926	−0.1256	0.1268
Int_4 – Other	−0.1073	0.0592	−1.8138	.0705**	−0.2236	0.009
Int_5 – Brand	0.0354	0.0637	0.5558	.5787	−0.0898	0.1606

Test(s) of Highest Order Unconditional Interaction(s)

	R^2 change	*F*	*df*1	*df*2	*p*
X*W	.0121	1.0742	5	402	.3741

Note. Y = OPI-O, X = SNS hr/day, W = Content, *N* = 412, Excluded variable(s) = Snap.

[a] Reference category = friends and family.

*$p < .05$. **$p < .10$. ***$p < .001$.

H3C – PROCESS v4.3 Hayes SPSS – Connections and OPI-O

When testing the moderating effects of number of SNS connections on the relationship between SNS hr/day and OPI-O, the test of unconditional interaction showed that the relationship between SNS hr/day and OPI-O was not significantly moderated by number of connections based on $p > .05$. The results indicated that number of connections had a significant relationship with OPI-O, with $B = 0.0723$, $p < .05$; however, there was no statistically significant interaction. Thus, the results do not support Hypothesis 3C, and the null hypothesis cannot be rejected.

Table 46

H3C – SPSS PROCESS Moderation Output – Connections and OPI-O

Model Summary[a]

R	R^2	*MSE*	*F*	*df*1	*df*2	*p*
.2162	.0467	0.1356	6.7018	3	410	.0002***

Coefficients

Model	Coefficient	*SE*	*t*	*p*	95% CI *LL*	95% CI *UL*
constant	2.8416	0.0184	154.4538	0	2.8054	2.8777
SNSHRDAY	0.0321	0.0132	2.4321	.0154*	0.0062	0.0581
SNSCONN	0.0723	0.0250	2.8950	.0040*	0.0232	0.1213
Int_1	0.0164	0.0170	0.9652	.3350	−0.0170	0.0497

Test(s) of Highest Order Unconditional Interaction(s)

	R^2	*F*	*df*1	*df*2	*p*
X*W	.0022	0.9317	1	410	.3350

Note. Y = OPI-O, X = SNS hr/day, W = Connections, $N = 414$.

*$p < .05$. **$p < .10$. ***$p < .001$.

H4A – PROCESS v4.3 Hayes SPSS – Platform and OPI-P

When testing the moderating effects of main platform on the relationship between SNS hr/day and OPI-P, the test of unconditional interaction showed that the relationship between SNS hr/day and OPI-P was not significantly moderated by main platform based on $p > .05$. With Facebook as the reference group for the model, the results showed that other platform had a significantly higher OPI-P than Facebook, with $B = 0.1295$. There were no significant interactions at $p < .05$.

Table 47

H4A – SPSS PROCESS Moderation Output – Platform and OPI-P

Model Summary[a]

R	R^2	*MSE*	*F*	*df*1	*df*2	*p*
.1829	.0335	0.1964	1.2588	11	400	.2463

Coefficients

Model	Coefficient	*SE*	*t*	*p*	95% CI *LL*	95% CI *UL*
Constant	2.2381	0.0375	59.655	0	2.1643	2.3118
SNSHRDAY	0.0614	0.0266	2.3072	.0216*	0.0091	0.1137

W1 – Twitter	0.0794	0.0594	1.3365	.1821	−0.0374	0.1963
W2 – Instagram	0.0751	0.0626	1.2009	.2305	−0.0479	0.1981
W3 – Other	0.1295	0.0713	1.817	.07**	−0.0106	0.2696
W4 – Tik Tok	0.061	0.0882	0.6918	.4895	−0.1124	0.2344
W5 – LinkedIn	−0.0492	0.2005	−0.2453	.8064	−0.4434	0.345
Int_1 – Twitter	−0.0144	0.0439	−0.3286	.7426	−0.1008	0.0719
Int_2 – Instagram	−0.0297	0.0444	−0.6684	.5043	−0.1171	0.0577
Int_3 – Other	−0.0295	0.0516	−0.5714	.5681	−0.131	0.072
Int_4 – Tik Tok	−0.0223	0.0574	−0.389	.6975	−0.1352	0.0905
Int_5 – LinkedIn	−0.077	0.1524	−0.5049	.6139	−0.3767	0.2227

Test(s) of Highest Order Unconditional Interaction(s)

	R^2 change	*F*	*df*1	*df*2	*p*
X*W	.0019	0.157	5	400	.9778

Note. Y = OPI-P, X = SNS hr/day, W = Main platform, $N = 412$, Excluded variable(s) = Snap.

[a] Reference category = Facebook.

*$p < .05$. **$p < .10$. ***$p < .001$.

H4B – PROCESS v4.3 Hayes SPSS – Content and OPI-P

When testing the moderating effects of main content on the relationship between SNS hr/day and OPI-P, the test of unconditional interaction showed that the relationship between SNS hr/day and OPI-P was not significantly moderated by main content based on $p > .05$; however, it was significantly moderated at the 90% confidence interval or $p < .10$. Based on friends and family content acting as the reference group for the model, the results showed that entertainment content had a significantly higher OPI-P than friends and family content, with $B = 0.1459$, $p < .05$. The results demonstrate that while main content is not a significant moderator of the relationship between SNS hr/day and OPI-P, there are three significant crossover interactions with entertainment and brand content at $p < .05$ and news content at $p < .10$. Entertainment

content had a significantly lower effect than the reference group and brand content but a higher one than news content, with $B = -0.0769$, $p < .05$. Brand content had a significantly higher effect than both entertainment and news content but a lower one than the reference group of friends and family. The results do not support Hypothesis 4B, and the null hypothesis cannot be rejected.

Table 48

H4B – SPSS PROCESS Moderation Output – Content and OPI-P

Model Summary[a]

R	R^2	*MSE*	*F*	*df*1	*df*2	*p*
.2719	.0739	0.1876	2.9182	11	402	0.001

Coefficients

Model	Coefficient	*SE*	*t*	*p*	95% CI *LL*	95% CI *UL*
constant	2.2669	0.0336	67.4527	.0000	2.2008	2.333
SNSHRDAY	0.0787	0.0249	3.162	.0017*	0.0298	0.1277
W1 – Entertainment	0.1459	0.0569	2.5656	.0107*	0.0341	0.2577
W2 – News	−0.0499	0.0592	−0.8427	.3999	−0.1663	0.0665
W3 – Influencer	0.1387	0.0964	1.4385	.1511	−0.0509	0.3283
W4 – Other	−0.0995	0.0991	−1.0033	.3163	−0.2944	0.0954
W5 – Brand	0.0361	0.1049	0.3437	.7312	−0.1702	0.2423
Int_1 – Entertainment	−0.0769	0.0384	−2.0029	.0459*	−0.1523	−0.0014
Int_2 – News	−0.0785	0.0447	−1.7569	.0797**	−0.1662	0.0093
Int_3 – Influencer	0.0697	0.0767	0.9083	.3643	−0.0811	0.2205
Int_4 – Other	−0.0588	0.0707	−0.8327	.4055	−0.1978	0.0801
Int_5 – Brand	−0.1623	0.0761	−2.1335	.0335*	−0.3119	−0.0128

Test(s) of Highest Order Unconditional Interaction(s)

	R^2 change	*F*	*df*1	*df*2	*p*
X*W	.0241	2.0931	5	402	.0654**

Note. Y = OPI-P, X = SNS hr/day, W = Content, $N = 414$.

[a] Reference category = friends and family .

*$p < .05$. **$p < .10$. ***$p < .001$.

H4C – PROCESS v4.3 Hayes SPSS – Connections and OPI-P

When testing the moderating effects of number of SNS connections on the relationship between SNS hr/day and OPI-P, the test of unconditional interaction showed that the relationship between SNS hr/day and OPI-P was not significantly moderated by number of connections based on $p > .05$. The results showed that number of connections did not have a significant relationship with OPI-O, with $B = 0.0723$, $p > .05$, and there was no statistically significant interaction. However, this relationship was significant at $p < .10$. The results do not support Hypothesis 3C, and the null hypothesis cannot be rejected.

Table 49

H4C – SPSS PROCESS Moderation Output – Connections and OPI-P

Model Summary[a]

R	R^2	*MSE*	*F*	*df*1	*df*2	*p*
.2162	.1703	0.0290	4.0826	3	410	.0071*

Coefficients

Model	Coefficient	*SE*	*t*	*p*	95% CI *LL*	95% CI *UL*
Constant	2.2929	0.219	104.5020	.0000	2.2498	2.3361
SNSHRDAY	0.0516	0.0158	3.2719	.0012*	0.0206	0.0826
SNSCONN	−0.0534	0.0298	−1.7925	.0738**	−0.1119	0.0052
Int_1	0.0007	0.0202	0.0358	.9714	−0.0390	0.0405

Test(s) of Highest Order Unconditional Interaction(s)

	R^2 change	*F*	*df*1	*df*2	*p*
X*W	.0000	0.0013	1	410	.9714

Note. Y = OPI-P, X = SNS hr/day, W = Connections, $N = 414$.

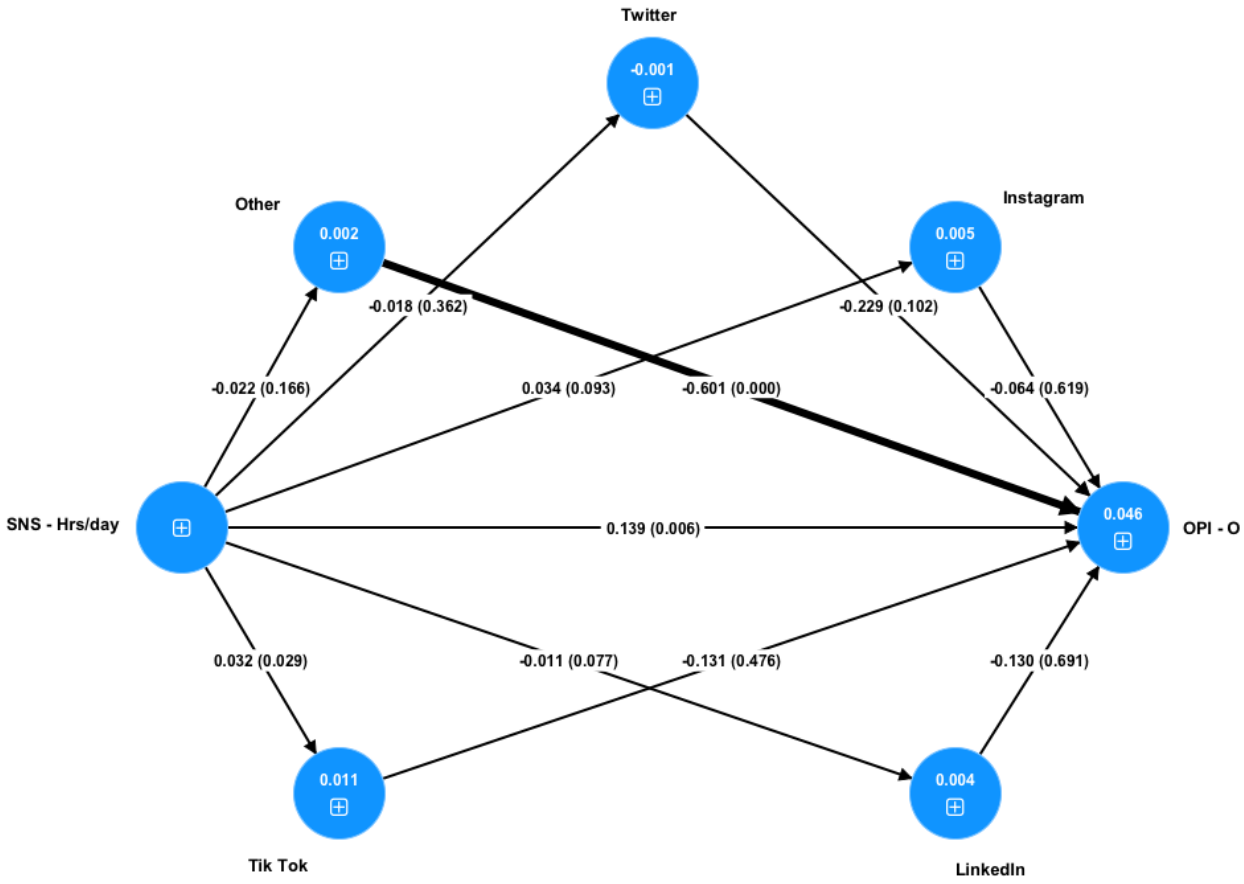
*$p < .05$. **$p < .10$. ***$p < .001$.

SmartPLS4 PLS-SEM Mediation Analysis – Main Platform, Main Content, Connections

H5A – SmartPLS4 PLS-SEM – Platform and OPI-O

Figure 33

H5A – SmartPLS4 PLS-SEM Mediation Model – Platform and OPI-O



When conducting a mediation analysis in SmartPLS4, it is important to present the results of the indirect effect (the impact of the predictor variable on the response variable), the total effect (the impact of the predictor on the response variable without the mediator), and the direct effect (the impact of the predictor on the response variable when the mediator is present). Once these metrics are reported, researchers are then able to determine whether there is full or partial mediation. Further, when using polytomous or nominal variables in SmartPLS4, researchers must use single item constructs representative of each group in the category to ensure the

parsimony of the model. Figure 33 and Table 50 show the results of mediation analysis when main platform is used as a mediator in the relationship between SNS hr/day and OPI-O. The results indicate that the total indirect effect of main platform on OPI-O was insignificant (β = 0.012, $t = 0.925$, $p > .05$). The results in Table 50 show, however, that total effect of main platform on OPI-O was significant (β = 0.151, $t = 3.035$, $p < .05$) with the inclusion of the mediator. The direct effect of main platform on OPI-O was significant (β = 0.139, $t = 2.762$, $p < .05$). The results demonstrate that main platform is not a significant mediator of the relationship between SNS hr/day and OPI-O, and thus they do not support Hypothesis 5A, and the null hypothesis cannot be rejected.

Table 50

H5A – Mediating Effect of Platform – OPI-O

Construct	Total effects			Direct effect				Total indirect effect				95% CI	
Mediator	Coefficient	*t*	*p*	Coefficient	t	*p*	Hypothesis	Coefficient	*SE*	*t*	*p*	*LL*	*UL*
Platform	0.151	3.035	0.002	0.139	2.762	.006	H5A: SNS hr/day > platform > OPI-O	0.012	0.013	0.925	.355	−0.014	0.041

Platform	Total effects			Direct effect				Specific indirect effect				95% CI	
Mediator	Coefficient	*t*	*p*	Coefficient	*t*	*p*	Hypothesis	Coefficient	*SE*	*t*	*p*	*LL*	*UL*
Tik Tok	0.151	3.035	0.002	0.139	2.762	.006	H5A: SNS hr/day > platform > OPI-O	−0.004	0.007	0.607	.544	−0.022	0.007
Twitter	0.151	3.035	0.002	0.139	2.762	.006	H5A: SNS hr/day > platform > OPI-O	0.004	0.006	0.663	.508	−0.004	0.020
LinkedIn	0.151	3.035	0.002	0.139	2.762	.006	H5A: SNS hr/day > platform > OPI-O	0.001	0.004	0.380	.704	−0.006	0.010
Instagram	0.151	3.035	0.002	0.139	2.762	.006	H5A: SNS hr/day > platform > OPI-O	−0.002	0.006	0.398	.691	−0.015	0.009
Other	0.151	3.035	0.002	0.139	2.762	.006	H5A: SNS hr/day > platform > OPI-O	0.013	0.010	1.347	.178	−0.006	0.035

Note. Excluded variable = Snap (due to inverse matrix issues, or small sample size for group).

[a] Reference category = Facebook.

*$p < .05$. **$p < .10$. ***$p < .001$.

H5B – SmartPLS4 PLS-SEM – Content and OPI-O

Figure 34

H5B – SmartPLS4 PLS-SEM Mediation Model – Content and OPI-O

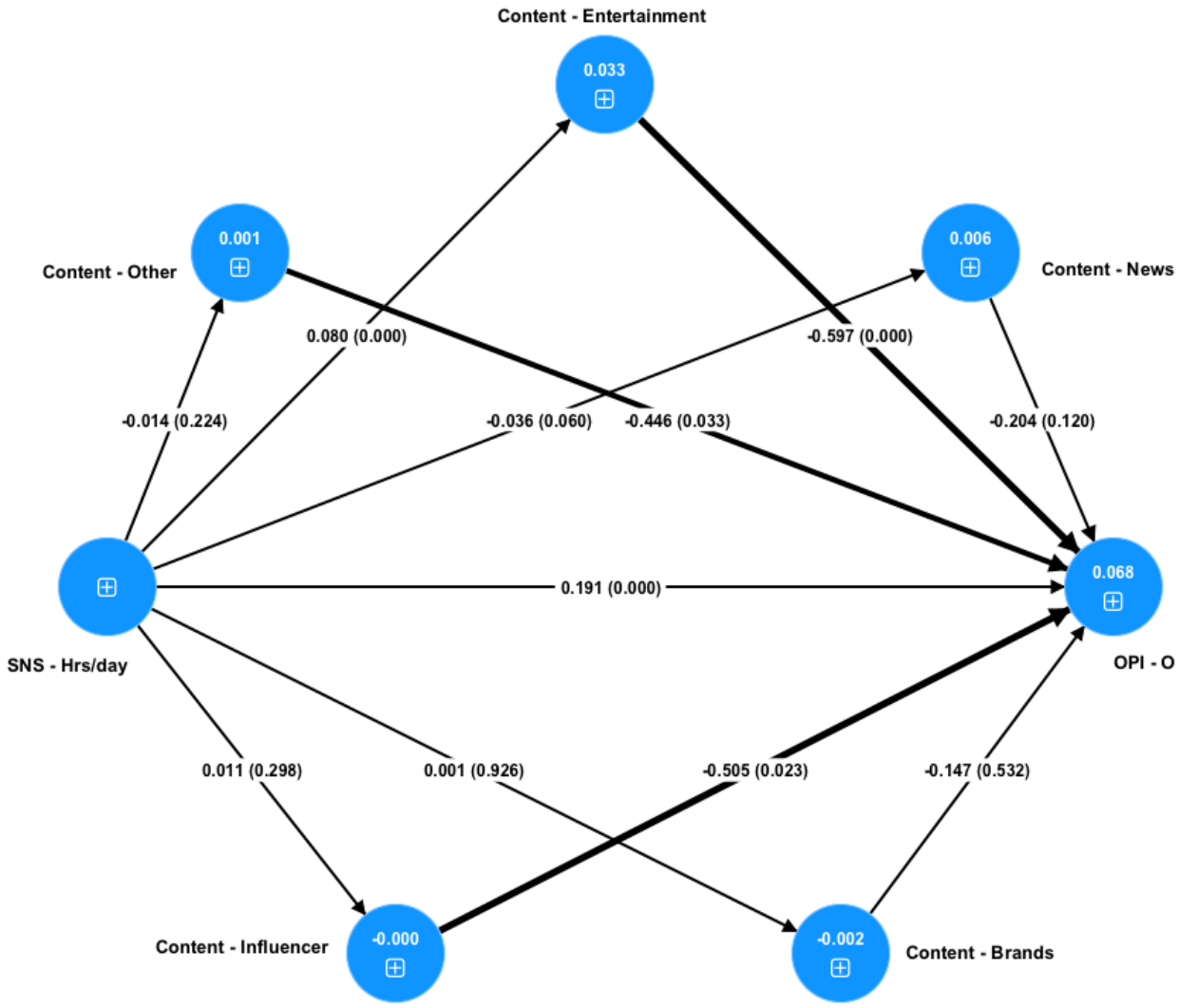


Figure 34 and Table 51 show the results of mediation analysis when main content is used as a mediator in the relationship between SNS hr/day and OPI-O. The results show that the total indirect effect of main platform on OPI-O was significant (β = −0.040, $t = 2.453$, $p < .05$). There was also a specific indirect effect of one of the single-item constructs representing entertainment content (β = −0.048, $t = 2.953$, $p < .05$). The results in Table 51 illustrate that total effect of main

platform on OPI-O was significant (β = 0.151, t = 3.105, p < .05) with the inclusion of the mediator. And the direct effect of main platform on OPI-O was significant (β = 0.191, t = 3.940, p < .05). The results indicate that main content is a significant partial mediator of the relationship between SNS hr/day and OPI-O and thus support Hypothesis 5B. As such, the null hypothesis is rejected.

Table 51

H5B – Mediating Effect of Content – OPI-O

Construct	Total effects			Direct effect				Total indirect effect				95% CI.	
Mediator	Coefficient	*t*	*p*	Coefficient	*t*	*p*	Hypothesis	Coefficient	*SE*	*t*	*p*	*LL*	*UL*
Content	0.151	3.105	.002	0.191	3.940	.000	H5B: SNS hr/day > content > OPI-O	−0.040	0.016	2.453	.014*	−0.074	0.011

Platform	Total effects			Direct effect				Specific indirect effect				95% CI	
Mediator	Coefficient	*t*	*p*	Coefficient	*t*	*p*	Hypothesis	Coefficient	*SE*	*t*	*p*	*LL*	*UL*
Influencer	0.151	3.032	.003	0.143	2.951	.004	H5B: SNS hr/day > content > OPI-O	−0.005	0.006	0.903	.367	−0.019	0.005
Entertainment	0.151	3.032	.003	0.143	2.951	.004	H5B: SNS hr/day > content > OPI-O	−0.048	0.016	2.953	.003*	−0.082	−0.020
Other	0.151	3.032	.003	0.143	2.951	.004	H5B: SNS hr/day > content > OPI-O	0.006	0.006	1.128	.260	−0.006	0.016
Brand	0.151	3.032	.003	0.143	2.951	.004	H5B: SNS hr/day > content > OPI-O	−0.000	0.003	0.049	.961	−0.006	0.007
News	0.151	3.032	.003	0.143	2.951	.004	H5B: SNS hr/day > content > OPI-O	0.007	0.007	1.069	.285	−0.002	0.025

[a] Reference category = friends and family.

*p < .05. **p < .10. ***p < .001.

H5C – SmartPLS4 PLS-SEM – Connections and OPI-O

Figure 35

H5C – SmartPLS4 PLS-SEM Mediation Model – Connections and OPI-O

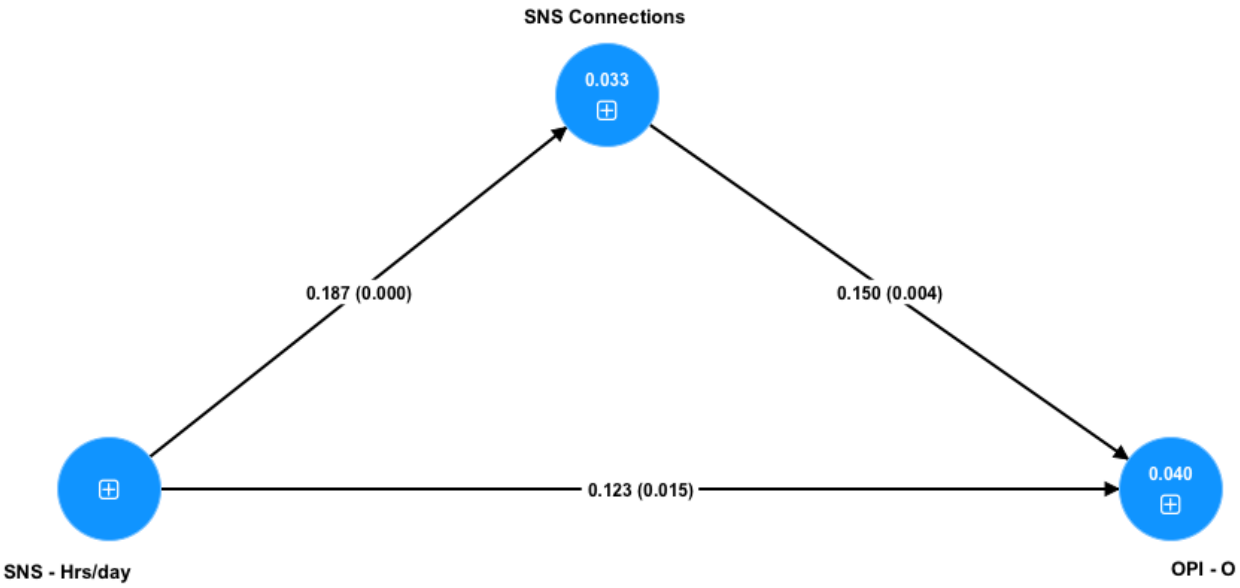


Figure 35 and Table 52 show the results of mediation analysis when main connections is used as a mediator between the relationship between SNS hr/day and OPI-O. The results demonstrate that the total indirect effect of main platform on OPI-O was significant (β = 0.028, t = 2.264, p < .05). And the results in Table 51 show that total effect of main platform on OPI-O was significant (β = 0.151, t = 3.120, p < .05) with the inclusion of the mediator. The direct effect of main platform on OPI-O was significant (β = 0.123, t = 2.474, p < .05). The results indicate that connections are a significant partial mediator of the relationship between SNS hr/day and OPI-O and thus support Hypothesis 5C. As such, the null hypothesis is rejected.

Table 52

H5C – Mediating Effect of Connections – OPI-O

Construct	Total effects	Direct effect	Total indirect effect	95% CI

Mediator	Coefficient	*t*	*p*	Coefficient	*t*	*p*	Hypothesis	Coefficient	*SE*	*t*	*p*	*LL*	*UL*
Platform	0.151	3.120	.002	0.123	2.474	.015	H5C: SNS hr/day > connections > OPI-O	0.028	0.012	2.264	.026*	0.008	0.054

*$p < .05$. **$p < .10$. ***$p < .001$.

H6A – SmartPLS4 PLS-SEM – Platform and OPI-P

Figure 36

H6A – SmartPLS4 PLS-SEM Mediation Model – Platform and OPI-P

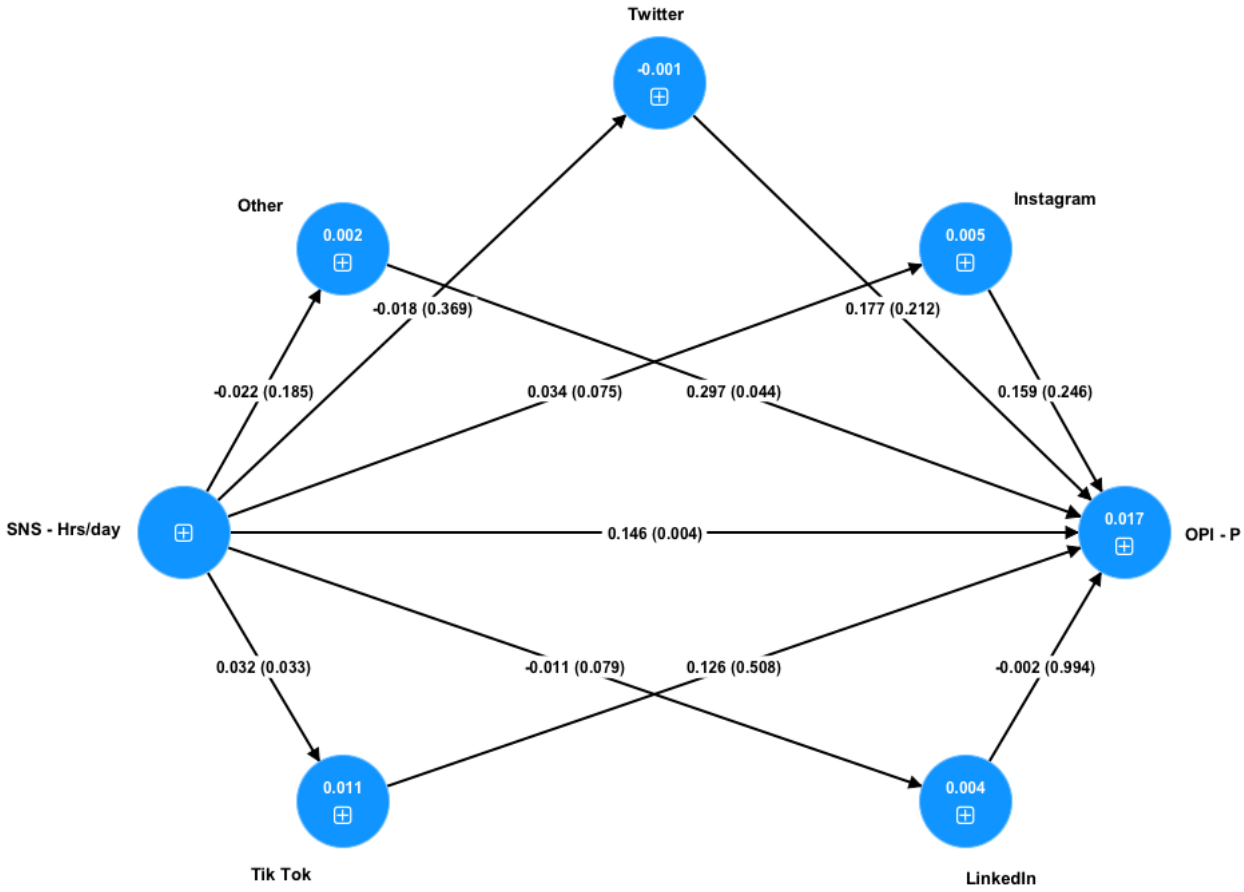


Figure 36 and Table 53 show the results of mediation analysis when main platform is used as a mediator between the relationship between SNS hr/day and OPI-P. The results illustrate that the total indirect effect of main platform on OPI-P was insignificant (β = −0.000, *t* = 0.018, *p* > .05). Table 53 shows that the total effect of main platform on OPI-O was significant (β = 0.146, *t* = 2.934, *p* < .05) with the inclusion of the mediator. The direct effect of main

platform on OPI-O was also significant (β = 0.146, t = 2.850, p < .05). These results demonstrate that main platform is not a significant mediator of the relationship between SNS hr/day and OPI-P, and thus do not support Hypothesis 6A. As such, the null hypothesis cannot be rejected.

Table 53

H6A – Mediating Effect of Platform – OPI-P

Construct	Total effects			Direct effect				Total indirect effect				95% CI	
Mediator	Coefficient	*t*	*p*	Coefficient	*t*	*p*	Hypothesis	Coefficient	*SE*	*t*	*p*	*LL*	*UL*
Platform	0.146	2.934	0.003	0.146	2.850	.004	H6A: SNS hr/day > platform > OPI-P	0.000	0.011	0.018	.985	−0.023	0.022
Platform	Total effects			Direct effect				Specific indirect effect				95% CI	
Mediator	Coefficient	*t*	*p*	Coefficient	*t*	*p*	Hypothesis	Coefficient	*SE*	*t*	*p*	*LL*	*UL*
Tik Tok	0.146	2.934	.003	0.146	2.850	.004	H6A: SNS hr/day > platform > OPI-P	−0.003	0.005	0.651	.515	−0.015	0.005
LinkedIn	0.146	2.934	.003	0.146	2.850	.004	H6A: SNS hr/day > platform > OPI-P	0.000	0.003	0.007	.994	−0.008	0.007
Other	0.146	2.934	.003	0.146	2.850	.004	H6A: SNS hr/day > platform > OPI-P	−0.007	0.007	1.007	.314	−0.022	0.004
Tik Tok	0.146	2.934	.003	0.146	2.850	.004	H6A: SNS hr/day > platform > OPI-P	0.004	0.007	0.583	.560	−0.009	0.019
Instagram	0.146	2.934	.003	0.146	2.850	.004	H6A: SNS hr/day > platform > OPI-P	0.005	0.006	0.886	.376	−0.004	0.021

Note. Excluded variable = Snap (due to inverse matrix issues, or small sample size for group).

[a] Reference category = Facebook.

*p < .05. **p < .10. ***p < .001.

H6B – SmartPLS4 PLS-SEM – Content and OPI-P

Figure 37

H6B – SmartPLS4 PLS-SEM Mediation Model – Content and OPI-P

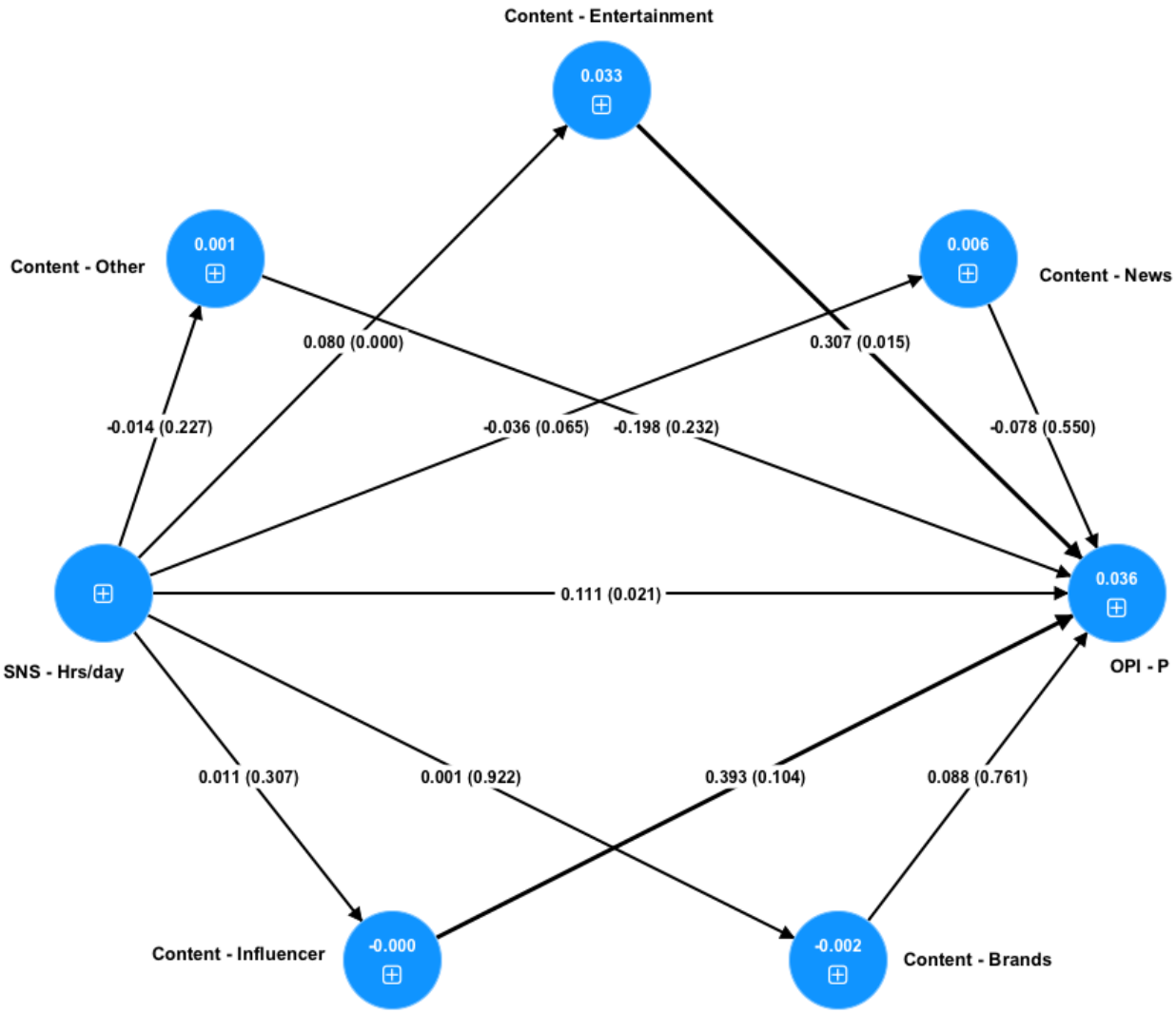


Figure 37 and Table 54 show the results of mediation analysis when main content is used as a mediator between the relationship between SNS hr/day and OPI-P. The results demonstrate that the total indirect effect of main platform on OPI-P was significant ($\beta = 0.034$, $t = 2.559$, $p < .05$). There was also a specific indirect effect of one of the single-item construct representing entertainment content ($\beta = 0.025$, $t = 2.099$, $p < .05$). The results in Table 54 also show that total

effect of main platform on OPI-O was significant (β = 0.146, t = 3.045, p < .05) with the inclusion of the mediator. The direct effect of main platform on OPI-O was significant (β = 0.111, t = 2.17, p < .05). The results indicate that main content is a significant partial mediator of the relationship between SNS hr/day and OPI-P, thus supporting Hypothesis 6B and rejecting the null hypothesis.

Table 54

H6B – Mediating Effect of Content – OPI-P

Construct	Total effects			Direct effect				Total indirect effect				95% CI.	
Mediator	Coefficient	*t*	*p*	Coefficient	*t*	*p*	Hypothesis	Coefficient	*SE*	*t*	*p*	*LL*	*UL*
Content	0.146	3.045	.002	.111	2.317	.021	H6B: SNS hr/day > content > OPI-P	0.034	0.013	2.559	.011*	0.010	0.061

Platform	Total effects			Direct effect				Specific indirect effect				95% CI	
Mediator	Coefficient	*t*	*p*	Coefficient	*t*	*p*	Hypothesis	Coefficient	*SE*	*t*	*p*	*LL*	*UL*
Influencer	0.146	3.045	.002	0.111	2.317	.021	H6B: SNS hr/day > content > OPI-P	0.004	0.006	0.715	.475	−0.002	0.020
Entertainment	0.146	3.045	.002	0.111	2.317	.021	H6B: SNS hr/day > content > OPI-P	0.025	0.012	2.099	.036*	0.005	0.049
Other	0.146	3.045	.002	0.111	2.317	.021	H6B: SNS hr/day > content > OPI-P	0.000	0.003	0.028	.978	−0.009	0.004
Brand	0.146	3.045	.002	0.111	2.317	.021	H6B: SNS hr/day > content > OPI-P	0.003	0.005	0.517	.605	−0.007	0.016
News	0.146	3.045	.002	0.111	2.317	.021	H6B: SNS hr/day > content > OPI-P	0.003	0.003	0.805	.421	−0.003	0.011

[a] Reference Category = friends and family.

*p < .05. **p < .10. ***p < .001.

H6C – SmartPLS4 PLS-SEM – Connections and OPI-P

Figure 38

H6C – SmartPLS4 PLS-SEM Mediation Model – Connections and OPI-P

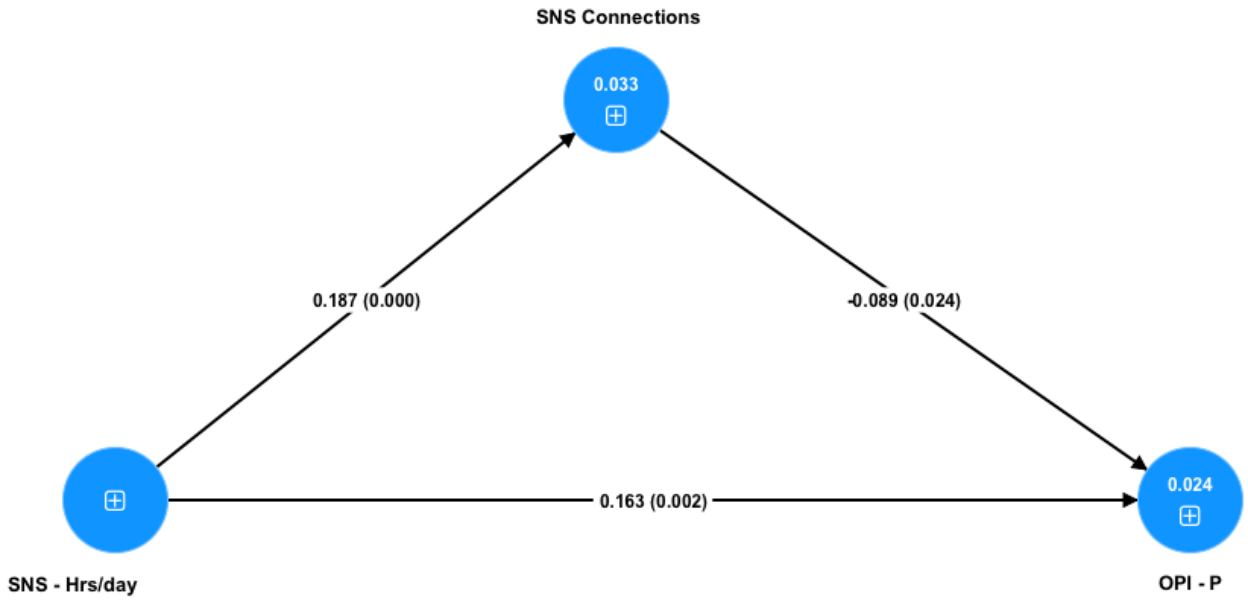


Figure 38 and Table 55 show the results of mediation analysis when number of SNS connections is used as a mediator between the relationship between SNS hr/day and OPI-P. These results indicate that the total indirect effect of connections on OPI-P was insignificant (β = −0.017, t = 1.925, p < .05). The results in Table 55 show that total effect of main platform on OPI-O was significant (β = 0.146, t = 2.945, p < .05) with the inclusion of the mediator. The direct effect of main platform on OPI-O was also significant (β = 0.163, t = 3.165, p < .05). The results demonstrate that connections are not a significant mediator of the relationship between SNS hr/day and OPI-P, and thus Hypothesis 6C is not supported. As such, the null hypothesis cannot be rejected. However, it should be noted that number SNS connections is a significant mediator at p < .10 or the 90% confidence interval.

Table 55

H6C – Mediating Effect of Connections – OPI-O

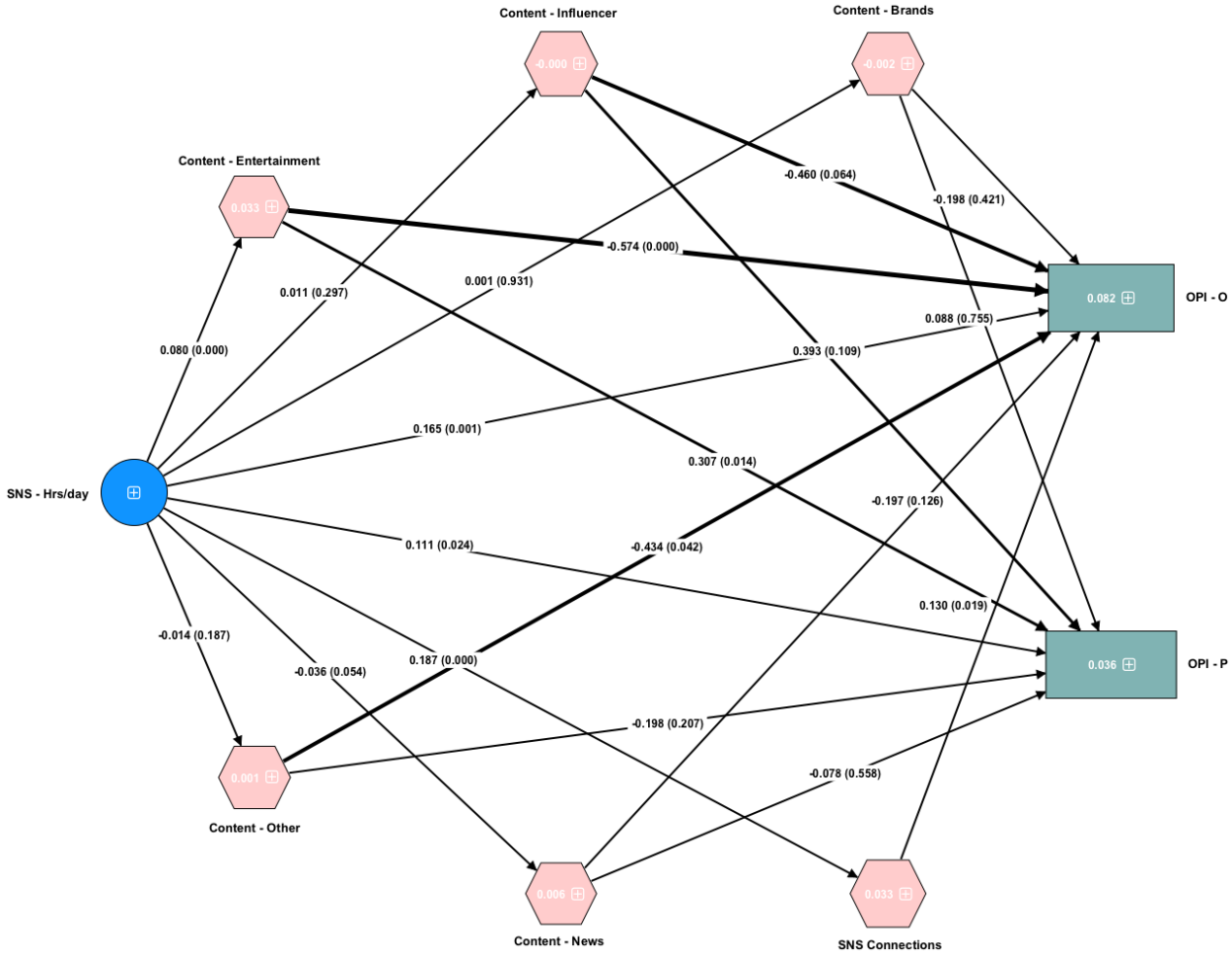
Construct	Total effects			Direct effect				Total indirect effect				95% CI	
Mediator	Coefficient	*t*	*p*	Coefficient	*t*	*p*	Hypothesis	Coefficient	*SE*	*t*	*p*	*LL*	*UL*
Platform	0.146	2.945	.004	0.163	3.165	.002	H6C: SNS hr/day > platform > OPI-P	−0.017	0.009	1.925	.057**	−0.041	0.005

*$p < .05$. **$p < .10$. ***$p < .001$.

SmartPLS4 PLS-SEM – Single-Item Construct Global Mediation Model

Figure 39

SmartPLS4 PLS-SEM Global Mediation Model



While the purpose of conducting this study is to find individual simple mediation and moderating effects of the variables used in analysis, a combined model proves useful in

demonstrating the simultaneous interactions and effects of all variables. The model presented in Figure 39 was constructed in SmartPLS4 and is a partial least squares structural equation model (PLS-SEM) representative of all significant mediators from the simple mediation analyses as well as the both latent variables (OPI-O and OPI-P). The content groups within the nominal categorical variable are represented as separate single-item constructs, and connections is a single-item construct acting as an ordinal categorical variable. One of the benefits of SmartPLS4 and PLS-SEM is that they allow researchers to understand the simultaneous relationships and interactions between predictors, mediators, and latent variables. An inspection of the model shows that OPI-O has more explanatory power than OPI-P, with an adjusted R^2 of .082, or 8.2% of the variance being explained by the model, while OPI-P has an adjusted R^2 of .036, or 3.6% of the variance being explained by the model. Further, SNS hr/day has a greater positive impact on OPI-O than OPI-P, with $\beta = 0.165$, $t = 3.222$, $p < .05$ and $\beta = 0.111$, $t = 2.258$, $p < .05$, respectively.

Figure 39 and Table 56 show the results of mediation analysis when accounting for the mediation effects of content on the relationship between SNS hr/day and OPI-O and OPI-P as well as connections on the relationship between SNS hr/day and OPI-O. The results demonstrate that when accounting for content and connection's mediating effect on SNS hr/day and OPI-O, the total indirect effect is no longer significant ($\beta = -0.014$, $t = 0.616$, $p > .05$). This is a result of content having a significant negative partial moderating effect and connections having a partial positive moderating effect on the relationship between SNS hr/day and OPI-O. As such, the opposite signs have a canceling effect on each other when considered simultaneously in the PLS-SEM model. The total indirect effect of content on OPI-P is significant ($\beta = 0.034$, $t = 2.638$, $p < .05$), and total effect for content and connections on OPI-O is significant as well ($\beta = 0.151$, $t =$

2.988, $p < .05$) with the inclusion of the mediator. The total effect for content on OPI-P is significant ($\beta = 0.146$, $t = 3.012$, $p < .05$) with the inclusion of the mediator. The direct effect of content and connections on OPI-O is significant ($\beta = 0.165$, $t = 3.222$, $p < .05$) as is direct effect of content on OPI-P ($\beta = 0.111$, $t = 2.258$, $p < .05$).

Table 56

SmartPLS4 PLS-SEM Global Model Mediation Effects Summary

Direct effects	Coefficient	*M*	*SD*	*t*	*p*	95% CI *LL*	95% CI *UL*
SNS hr/day > OPI-O	0.165	0.166	0.051	3.222	.001*	0.067	0.265
SNS hr/day > OPI-P	0.111	0.111	0.049	2.258	.024*	0.012	0.202
Specific indirect effects	Coefficient	*M*	*SD*	*t*	*p*	95% CI *LL*	95% CI *UL*
SNS hr/day > content – entertainment > OPI-O	−0.046	−0.045	0.015	3.045	.002*	−0.076	−0.019
SNS hr/day > content – entertainment > OPI-P	0.025	0.023	0.011	2.148	.032*	0.004	0.048
SNS hr/day > content – influencer > OPI-O	−0.005	−0.006	0.006	0.799	.425	−0.021	0.004
SNS hr/day > content – influencer > OPI-P	0.004	0.005	0.006	0.761	.447	−0.002	0.018
SNS hr/day > content – brands > OPI-O	−0.000	−0.000	0.003	0.056	.956	−0.009	0.007
SNS hr/day > content – brands > OPI-P	0.000	−0.001	0.003	0.027	.978	−0.009	0.004
SNS hr/day > content – news > OPI-O	0.007	0.007	0.006	1.127	.260	−0.002	0.022
SNS hr/day > content – news > OPI-P	0.003	0.003	0.005	0.527	.598	−0.008	0.016
SNS hr/day > content – other > OPI-O	0.006	0.005	0.005	1.188	.236	−0.004	0.016
SNS hr/day > content – news > OPI-P	0.003	0.003	0.005	0.527	.598	−0.003	0.011
SNS hr/day > SNS connections > OPI-O	0.024	0.024	0.013	1.887	.060**	0.003	0.052
Total indirect effects	Coefficient	*M*	*SD*	*t*	*p*	95% CI *LL*	95% CI *UL*
SNS hr/day > OPI-O	−0.014	−0.013	0.022	0.616	.538	−0.060	0.028
SNS hr/day > OPI-P	0.034	0.033	0.013	2.638	.009*	0.010	0.062
Total effects	Coefficient	*M*	*SD*	*t*	*p*	95% CI *LL*	95% CI *UL*
SNS hr/day > OPI-O	0.151	0.153	0.051	2.988	.003*	0.044	0.254
SNS hr/day > OPI-P	0.146	0.144	0.048	3.012	.003*	0.040	0.233

Note. Reference indicators = content – friends and family.

*$p < .05$. **$p < .10$. ***$p < .001$.

Conditional Effects of Main Platform, Main Content, and Connections

A series of OLS regressions were conducted to measure the conditional effects of each group within each category on the predictive power of the predictor and response variables, SNS hr/day and OPI-O/OPI-P, respectively. While conditional effects can be included in SPSS PROCESS v4.3 Hayes macro when conducting moderation analyses, a section at the end of Chapter 4 determined a better way of relaying the individual effect of the different groups within each category after gaining an understanding of the overall unconditional effects and significance of the polytomous moderating/mediating variables. Further, the lack of a significance for any of the moderating variables demonstrates that there was no need to include the conditional effects with the moderation analyses since the relationship between X and Y was not affected by the moderators.

Main SNS Platform Used

Table 57 shows that for people that use Twitter as a main SNS platform, SNS hr/day significantly predicts OPI-O, with $B = 0.03$, $p < .05$. This demonstrates that for every 1 hour increase of SNS use, a Twitter user's optimism will increase by 0.03. No other significant relationships were found for any of the other groups.

Table 57

OPI-O Model Summary Segmented by Platform[a]

Platform	*n*	Variable	Coefficient	*SE*	95% CI *LL*	95% CI *UL*	*t*	*p*	β/*R*	R^2	Adjusted R^2
Facebook	140	Intercept	2.83	0.06	2.72	2.95	49.85	.00			
		SNS hr/day	0.03	0.02	−0.01	0.07	1.37	.17	.12	.01	.01
Twitter	93	Intercept	2.57	0.08	2.40	2.74	30.56	.00			

Platform	*n*	Variable	Coefficient	*SE*	95% CI *LL*	95% CI *UL*	*t*	*p*	β/*R*	R^2	Adjusted R^2
		SNS hr/day	0.11	0.03	0.04	0.17	3.33	.00127*	.33	.11	.10
Instagram	81	Intercept	2.78	0.08	2.62	2.94	34.73	.00			
		SNS hr/day	0.04	0.03	−0.01	0.10	1.52	.13	.17	.03	.02
Other	55	Intercept	2.73	0.09	2.55	2.91	30.70	.00			
		SNS hr/day	−0.03	0.04	−0.10	0.04	−0.81	.42	−.11	.01	.01
Tik Tok	35	Intercept	2.90	0.14	2.62	3.18	20.98	.00			
		SNS hr/day	−0.01	0.04	−0.09	0.08	−0.19	.85	.03	.001	−.03
LinkedIn	8	Intercept	2.72	0.23	2.16	3.29	11.78	.00002	.21	.05	−.11
		SNS hr/day	0.07	0.12	−0.23	0.37	0.54	.61			
Snap[b]	2	Intercept	-	-	-	-	-	-	-	-	-
		SNS hr/day	-	-	-	-	-	-	-	-	-

[a] Dependent variable: OPI-O. [b] Snap excluded due to zero variance (small sample, $N = 2$).

*$p < .05$. **$p < .10$. ***$p < .001$.

Table 58 shows that for people who use Facebook as a main platform, SNS hr/day significantly predicts OPI-P, with $B = 0.06$, $p < .05$. This result demonstrates that for every additional hour increase in SNS use per day, a Facebook user's pessimism will increase by 0.06. There were no other significant relationships among remaining groups within the main platform category.

Table 58

OPI-P Model Summary Segmented by Platform

Platform	*n*	Variable	Coefficient	*SE*	95% CI *LL*	95% CI *UL*	*t*	*p*	β/*R*	R^2	Adjusted R^2
Facebook	140	Intercept	2.09	0.07	1.96	2.23	31.08	.00			
		SNS hr/day	0.06	0.03	0.01	0.11	2.44	.02*	.20	.04	.03
Twitter	93	Intercept	2.21	0.10	2.00	2.41	21.46	.00			
		SNS hr/day	0.05	0.04	−0.03	0.13	1.19	.24	.12	.02	.005
Instagram	81	Intercept	2.24	0.10	2.03	2.45	21.45	.00			

Platform	*n*	Variable	Coefficient	*SE*	95% CI *LL*	95% CI *UL*	*t*	*p*	β/*R*	R^2	Adjusted R^2
		SNS hr/day	0.03	0.04	−0.04	0.10	0.90	.37	.10	.01	−.002
Other	55	Intercept	2.29	0.10	2.08	2.50	22.14	.00			
		SNS hr/day	0.03	0.04	−0.05	0.11	0.78	.44	.11	.01	−.01
Tik Tok	35	Intercept	2.21	0.16	1.87	2.54	13.39	.00			
		SNS hr/day	0.04	0.05	−0.06	0.14	0.77	.45	.13	.02	−.01
LinkedIn	8	Intercept	2.23	0.26	1.60	2.85	8.67	.00013	-	-	-
		SNS hr/day	−0.016	0.14	−0.35	0.32	−0.11	.91	.05	.002	-.164
Snap[b]	2	Intercept	-	-	-	-	-	-	-	-	-
		SNS hr/day	-	-	-	-	-	-	-	-	-

[a] Dependent variable: OPI-P. [b] Snap excluded due to zero variance (small sample, $n = 2$).

*$p < .05$. **$p < .10$. ***$p < .001$.

Main SNS Content Viewed

Table 59 shows that two types of content were statistically significant. For people who mainly view content from friends and family, SNS hr/day significantly predicts OPI-O, with $B = 0.05$, $p < .05$, while content from entertainment had a B of 0.07, $p < .05$. This means that for each additional hour of SNS exposure to friends and family content, OPI-O will increase by 0.05, while each additional hour of SNS exposure to entertainment content results in an OPI-O increase of 0.07. This result demonstrates that entertainment content on SNS has a stronger effect than friends and family content on SNS, with significance. News content was not significant at $p < .05$; however, it was significant at $p < .10$ or the 90% confidence interval. There were no other significant relationships from the remaining content types.

Table 59

OPI-O Model Summary Segmented by Content[a]

Content	*n*	Variable	Coefficient	*SE*	95% CI *LL*	95% CI *UL*	*t*	*p*	β/*R*	R^2	Adjusted R^2
Friends and family	168	Intercept	2.83	0.05	2.72	2.93	53.38	.00			

Content	*n*	Variable	Coefficient	*SE*	95% CI *LL*	95% CI *UL*	*t*	*p*	β/*R*	R^2	Adjusted R^2
		SNS hr/day	0.05	0.02	0.004	0.09	2.19	.03*	.168	.03	.02
Entertainment (i.e., movies, gaming, series, music)	98	Intercept	2.53	0.08	2.38	2.69	32.81	.00			
		SNS hr/day	0.07	0.02	0.02	0.12	2.95	.004*	.29	.08	.07
News	82	Intercept	2.71	0.08	2.55	2.87	34.00	.00			
		SNS hr/day	0.06	0.03	−0.001	0.13	1.97	.052**	.22	.05	.03
Influencer and celebrity	24	Intercept	2.64	0.20	2.23	3.05	13.26	.00			
		SNS hr/day	0.05	0.07	−0.10	0.19	0.66	.52	.14	.02	-.03
Other	23	Intercept	2.64	0.20	2.23	3.05	13.26	.00			
		SNS hr/day	0.05	0.07	−0.10	0.19	0.66	.52	.14	.07	.02
Brand	19	Intercept	2.69	0.17	2.34	3.04	16.01	.00			
		SNS hr/day	0.08	0.06	−0.05	0.21	1.32	.20	.30	.09	.04

[a] Dependent variable: OPI-O.

*$p < .05$. **$p < .10$. ***$p < .001$.

Table 60 shows that only one type of content was significant at $p < .05$, which was main content from friends and family. For people who mainly view content from friends and family, SNS hr/day significantly predicts OPI-P, with $B = 0.08$, $p < .05$. This result demonstrates that for every additional hour of SNS exposure to friends and family content, OPI-P will increase by 0.08. While there were no other significant relationships at the 95% confidence interval, influencer and celebrity content was significant at $p < .10$.

Table 60

OPI-P Model Summary Segmented by Content[a]

Content	*n*	Variable	Coefficient	*SE*	95% CI *LL*	95% CI *UL*	*t*	*p*	β/*R*	R^2	Adjusted R^2
Friends and family	168	Intercept	2.08	0.07	1.95	2.21	31.09	.000			
		SNS hr/day	0.08	0.03	0.03	0.13	3.05	.003*	.23	.05	.05
Entertainment (i.e., movies,	98	Intercept	2.41	0.09	2.23	2.58	27.36	.00			

Content	*n*	Variable	Coefficient	*SE*	95% CI *LL*	95% CI *UL*	*t*	*p*	β/*R*	R^2	Adjusted R^2
gaming, series, music)											
		SNS hr/day	0.002	0.03	−0.05	0.06	0.07	.95	.01	.00005	-.01
News	82	Intercept	2.24	0.08	2.07	2.40	27.03	.00			
		SNS hr/day	−0.003	0.01	−0.02	0.02	−0.29	.77	-.03	.001	-.01
Influencer and celebrity	24	Intercept	2.05	0.22	1.59	2.52	9.23	.00			
		SNS hr/day	0.15	0.08	−0.01	0.31	1.93	.07**	.38	.14	.11
Other	23	Intercept	2.12	0.11	1.88	2.36	18.60	.00			
		SNS hr/day	0.02	0.05	−0.08	0.12	0.42	.68	.09	.009	-.04
Brand	19	Intercept	2.50	0.24	2.00	3.00	10.51	.00			
		SNS hr/day	−0.08	0.09	−0.27	0.10	−0.97	.34	-.23	.05	-.003

[a] Dependent variable: OPI-P.

*$p < .05$. **$p < .10$. ***$p < .001$.

Number of SNS Connections

While number of SNS connections as a nominal variable was not used in any previous analyses, it was posited that this analysis of the conditional effects of connections would provide additional insight. Table 61 showed that for people with SNS connections between 1,000–9,999, SNS hr/day significantly predicts OPI-O, with $B = 0.06$, $p < .05$. Further, while people with 0–99 connections was not significant at $p < .05$, it was significant at $p < .10$.

Table 61

OPI-O Model Summary Segmented by Connections as Categorical

Connections	*n*	Variable	Coefficient	*SE*	95% CI *LL*	95% CI *UL*	*t*	*p*	β/*R*	R^2	Adjusted R^2
100–999	213	Intercept	2.82	0.05	2.72	2.92	55.99	.00			
		SNS hr/day	0.01	0.02	−0.03	0.05	0.40	.69	.03	.00074	-.004
0–99	110	Intercept	2.68	0.06	2.55	2.80	41.20	.00			
		SNS hr/day	0.04	0.03	−0.01	0.09	1.73	.09**	.16	.03	.02
1,000–9,999	84	Intercept	2.79	0.09	2.62	2.96	32.15	.00			

Connections	*n*	Variable	Coefficient	*SE*	95% CI *LL*	95% CI *UL*	*t*	*p*	β/*R*	R^2	Adjusted R^2
		SNS hr/day	0.06	0.03	0.00	0.11	2.09	.04*	.23	.05	.04
10,000–99,999	7	Intercept	-	-	-	-	-	-	-	-	-
		SNS hr/day	-	-	-	-	-	-	-	-	-
100,000+	1	Intercept	-	-	-	-	-	-	-	-	-
		SNS hr/day	-	-	-	-	-	-	-	-	-

[a] Dependent variable: OPI-O.

*$p < .05$. **$p < .10$. ***$p < .001$.

Table 62 shows that for people with SNS connections between 0–99, SNS hr/day significantly predicts OPI-P, with $B = 0.06$, $p < .05$, while for people with 1,000–9,999 connections, SNS hr/day significantly predicts OPI-P, with $B = 0.09$, $p < .05$.

Table 62

OPI-P Model Summary Segmented by Connections as Categorical

Connections	*n*	Variable	Coefficients	*SE*	95% CI *LL*	95% CI *UL*	*t*	*p*	β/*R*	R^2	Adjusted R^2
100–999	213	Intercept	2.23	0.06	2.11	2.36	36.31	.00			
		SNS hr/day	0.03	0.02	−0.01	0.08	1.46	.15	.10	.01	.005
0–99	110	Intercept	2.18	0.07	2.04	2.31	31.84	.00			
		SNS hr/day	0.06	0.03	0.005	0.11	2.16	.03*	.20	0.04	.03
1,000–9,999	84	Intercept	1.98	0.11	1.76	2.21	17.74	.00			
		SNS hr/day	0.09	0.03	0.03	0.16	2.77	.01*	.29	.09	.08
10,000–99,999	7	Intercept	-	-	-	-	-	-	-	-	-
		SNS hr/day	-	-	-	-	-	-	-	-	-
100,000+	1	Intercept	-	-	-	-	-	-	-	-	-
		SNS hr/day	-	-	-	-	-	-	-	-	-

[a] Dependent variable: OPI-P.

*$p < .05$. **$p < .10$. ***$p < .001$.

Summary of Hypothesis Testing

Hypothesis 1: No Controls

A. There is a statistically significant relationship between degree of SNS use and OPI optimism mean scores when not controlling for demographics. The null hypothesis is rejected.

B. There is a statistically significant relationship between degree of SNS use and OPI pessimism mean scores when not controlling for demographics. The null hypothesis is rejected.

Hypothesis 2: Demographic Controls

A. There is a statistically significant relationship between degree of SNS use and OPI optimism mean scores when controlling for demographics. The null hypothesis is rejected.

B. There is a statistically significant relationship between degree of SNS use and OPI pessimism mean scores when controlling for demographics. The null hypothesis is rejected.

Hypothesis 3: Moderating Optimism

A. Main SNS platform used does not moderate the relationship between the degree of SNS use and OPI optimism mean scores, and the null hypothesis cannot be rejected.

B. Main SNS content viewed does not moderate the relationship between the degree of SNS use and OPI optimism mean scores, and the null hypothesis cannot be rejected.

C. Number of SNS connections does not moderate the relationship between the degree of SNS use and OPI optimism mean scores, and the null hypothesis cannot be rejected.

Hypothesis 4: Moderating Pessimism

A. Main SNS platform used does not moderate the relationship between the degree of SNS use and OPI pessimism mean scores, and the null hypothesis cannot be rejected.

B. Main SNS content viewed does not moderate the relationship between the degree of SNS use and OPI pessimism mean scores, and the null hypothesis cannot be rejected.

C. Number of SNS connections does not moderate the relationship between the degree of SNS use and OPI pessimism mean scores, and the null hypothesis cannot be rejected.

Hypothesis 5: Mediating Optimism

A. Main SNS platform used does not mediate the relationship between the degree of SNS use and OPI optimism mean scores, and the null hypothesis cannot be rejected.

B. Main SNS content viewed partially mediates the relationship between the degree of SNS use and OPI optimism mean scores, and the null hypothesis is rejected.

C. Number of SNS connections partially mediates the relationship between the degree of SNS use and OPI optimism mean scores, and the null hypothesis is rejected.

Hypothesis 6: Mediating Pessimism

A. Main SNS platform used does not mediate the relationship between the degree of SNS use and OPI pessimism mean scores, and the null hypothesis cannot be rejected.

B. Main SNS content viewed partially mediates the relationship between the degree of SNS use and OPI pessimism mean scores, and the null hypothesis is rejected.

C. Number of SNS connections does not mediate the relationship between the degree of SNS use and OPI pessimism mean scores, and the null hypothesis cannot be rejected.

Summary

In this chapter, the research questions and hypotheses were reintroduced, which primarily concern determining the relationship between degree of SNS use and optimism/pessimism mean scores from the OPI with and without demographic controls. This involved testing variables such as main platform used, main content viewed, and number of connections to understand how these SNS variables interact with the relationship between the predictor and the response variables. These interactions were first input into SPSS PROCESS, which tested for moderating effects of

the nominal categorical SNS variables. SmartPLS4 was then used to develop PLS-SEMs to demonstrate the mediating effects of these SNS variables.

The results of the study showed that there is a significant relationship between the degree of use, represented by SNS hr/day, due to SLR showing that the other two predictors, SNS access/day and SNS total time used, were not significant. When controlling for significant demographic characteristics, the relationship between SNS hr/day and OPI-O/OPI-P remained significant. While the controls explained more of the variance in the model, they did not weaken SNS hr/day in explanatory power, while adding controls slightly weakened the explanatory power of SNS hr/day with OPI-P.

Moderation testing showed that there were no significant moderators, but significant crossover interactions were present. Mediation testing showed that main content and number of connections were partial mediators of the relationship between SNS hr/day and OPI-O, while only content was a significant partial mediator of SNS hr/day and OPI-P. When developing a global mediation PLS-SEM model in SmartPLS4, the negative mediating effects of content and positive mediating effects of connections canceled each other out for OPI-O, while content maintained a positive mediating effect between SNS hr/day and OPI-P. The results showed that degree of SNS use represented by hours per day has a greater positive impact on OPI-O than OPI-P, and there is also greater explanatory power in the relationship between SNS hr/day and OPI-O than OPI-P.

In Chapter 5, a summary of the findings from Chapter 4 as they relate to the study's research questions presented will be presented. An interpretation of the findings will also be presented followed by an explanation of the theoretical, methodological, and practical

implications. The delimitations and limitations will then be discussed followed by recommendations for future research.

Chapter 5: Discussion, Recommendations, and Conclusions

Overview

This purpose of this study was to determine the relationship between the degree of SNS use and mean scores from the OPI while also testing for the moderating/mediating effects of main platform used, main content viewed, and number of connections on this relationship. This addresses the research problem, which is the presence of a gap in the literature related to the degree of SNS use as a predictor for determining the effect on latent variables related to optimism and pessimism. Also, there has been scant or nonexistent research examining the moderating/mediating effects of main platform used, main type of content viewed, and number of connections. This study is significant in that it addressed this literature and adds valuable insights to the field of communication theory by showing the impact of degree of SNS use on the attitudes of users and how content and number of connections mediates this relationship. This information can be used by researchers, platform developers, and policymakers to ensure that SNS use is properly regulated, developed, and used in such a way as to minimize risk, harm, and exploitation of the user.

This study was completed based on a correlational, quantitative design and through the implementation of a cross-sectional, analytical survey to gather data relating to the demographics, SNS degree and type of use characteristics, and OPI mean scores. Analyses were conducted through descriptive statistics, regression, ANOVA, bootstrapping, path analysis, and SEM. Results showed a significant positive relationship between degree of use, represented by SNS hr/day, and both optimism and pessimism mean scores. It was further determined via bootstrapping in SPSS PROCESS and path analysis/SEM in SmartPLS4 that content and number

of connections has a mediating effect on this relationship. The conditional effects were presented for individual platform, content, and number of connections.

The following sections include a summary and interpretation of the findings, implications for theory, method, and practice, delimitations and limitations, recommendations for future research, a summary of the significance of the study, and a concluding statement.

Summary of Findings

The purpose of this study was to fill a gap in the literature where SNSs have been used as the medium for understanding the cultivation effects of degree of SNS use on attitudes, namely optimism and pessimism as measured by the OPI. Important in the theory of cultivation is the understanding of how content plays a role in the cultivation effects on the user based on the degree of use, which was found in this study by determining the moderating/mediating effects of content as a construct and also the conditional effects of each group within the construct. Furthermore, with the literature discussed in Chapter 2, it was shown that type of platform and number of connections may play a role in the cultivation effects of SNSs based on the degree of use, and as such, these variables were included when determining moderating, mediating, and conditional effects. A number of important findings issued from the results of the study that answer the research questions and support many of the hypotheses.

Before beginning the analyses to answer the research questions and test the hypotheses, it was important to clean the data and test the validity and reliability of the instrument as well as conduct inferential statistical analyses to ensure the data was normally distributed and met the assumptions of MLR. A test of the reliability and internal consistency of the published instrument used in the study demonstrated approximately similar results to those found by Dember et al. (1989), which demonstrated that the instrument had a high level of internal

consistency, with a Cronbach's alpha of .85 for OPI-O and .87 for OPI-P. The Pearson's correlation of the OPI constructs was $r = -.54$, with a canonical correlation of .73. These results demonstrated that while the Pearson's correlation and canonical correlation were high, these two correlations were lower than the Cronbach's alphas, supporting that the constructs representing optimism and pessimism should be treated separately and not on a bipolar scale.

The study used a cross-sectional, analytical survey that was developed in Qualtrics and implemented through CloudResearch's Connect platform. A total of 529 respondents participated in the survey, with 513 respondents completing the survey. Following cleaning of the data through the use of the IQR method and the removal of erroneous answers, the final count of participants was 414, a 96.9% completion rate, with 78.2% of surveys being valid for analysis. Once the data was cleaned, it was used to test the assumptions of MLR, which resulted in all assumptions being met. The distribution of data demonstrated that on average, respondents spend 2.37 hours per day on SNSs, access SNSs 6.64 times per day, and have been using SNS for approximately 12.49 years. The overall mean score for optimism (OPI-O) was 2.84, while pessimism (OPI-P) was 2.29, demonstrating that most people are more optimistic than pessimistic. The gender distribution of the data was 213 (51%) females and 201 (49%) males. Racial distribution of the data was 287 (69%) White, 46 (11%) Black, 37 (9%) Asian, 30 (7%) Hispanic, 10 (2%) other, and 4 (1%) American Indian or Alaska Native.

Stepwise MLR was conducted to test the relationship between the degree of SNS use as the predictor and OPI-O and OPI-P as the response variables. The results of regression demonstrated a significant relationship between SNS hr/day used and OPI-O and OPI-P. The excluded variables were SNS access/day and SNS total years. ANOVA was then used to test the significance of demographic controls for inclusion in the MLR model with these controls. The

ANOVA tests for OPI-O showed that only education, employment, and relationship were significant controls, and these were added to the model for analysis using hierarchical regression. The ANOVA tests for OPI-P showed that only age was a significant control, and it was added to the model for hierarchical regression.

The hierarchical regression with significant controls for OPI-O showed that the control variables accounted for more of the variance in the model than the predictor alone and the predictor with controls included. However, the predictor variable remained significant, and the amount of variance from being used in isolation to being used with controls did not change, showing that the addition of controls did not weaken the power of the variance explained by the predictor for OPI-O. The hierarchical regression with a significant control variable for OPI-P showed that the control accounted for more of the variance in the model and also that the addition of the control variable weakened the explanatory power of the predictor variable versus when it is used in isolation. However, the predictor variable did remain significant when the significant control was added, demonstrating that although low, the degree of use of SNSs affected OPI-P as well as OPI-O. When not controlling for demographics, degree of SNS use has a slightly greater effect on OPI-P, while it has greater explanatory power with OPI-O.

When controlling for demographics, degree of SNS use has a greater impact on OPI-O as well as greater explanatory power with OPI-O as a result of the control variable weakening the explanatory power with OPI-P. When conducting moderation analyses using SPSS PROCESS, none of the moderating variables (main platform used, main content viewed, and number of connections) resulted in significant moderation effects; however, there were significant crossover interactions. When testing main platform as a moderator between SNS hr/day and OPI-O, Twitter demonstrated a significant crossover interaction, $p < .05$. When testing content as a

moderator between SNS hr/day and OPI-P, entertainment and brand content demonstrated significant crossover interactions, $p < .05$.

Developing PLS-SEMs in SmartPLS4 led to a number of interesting findings. PLS-SEMs were first developed using bootstrapping in SmartPLS4 for simple mediation analyses. Following this series of analyses, a global mediation model was developed to demonstrate the relationships and mediating effects between all significant predictors, mediators, and response variables. The predictor variable was SNS hr/day, and the response variables were OPI-O and OPI-P. The mediator variables included main platform used, main content viewed, and number of connections (as an ordinal variable, treated as continuous).The resulting simple mediation analyses showed that main platform does not mediate the relationship between SNS hr/day and OPI-O or OPI-P. It was found that main content viewed was a significant mediator between SNS hr/day and OPI-O and OPI-P, where it negatively partially mediates OPI-O and positively partially mediates OPI-P. Number of connections did not mediate the relationship between SNS hr/day and OPI-P, but it did partially positively mediate OPI-O based on SNS hr/day. The global PLS-SEM mediation model, which accounted for all significant relationships and effects, showed that SNS hr/day had a greater impact and explanatory power on OPI-O than OPI-P when factoring in all significant mediators.

Exploring the conditional effects of main platform, main content, and number of connections (as a nominal variable) uncovered several key findings. When determining the relationship between SNS hr/day and OPI-O conditionally for main platform, the results showed that only Twitter was significant at $p < .05$, having a positive linear relationship. When determining the relationship between SNS hr/day and OPI-P conditionally for main platform, the results showed that only Facebook was significant at $p < .05$, having a positive linear

relationship. When determining the relationship between SNS hr/day and OPI-O conditionally for main type of content of viewed, the results demonstrated significant positive linear relationships for two content groups at $p < .05$: friends and family and entertainment. When determining the relationship between SNS hr/day and OPI-P conditionally for main type of content viewed, there was one significant positive linear relationship for the friends and family content group at $p < .05$. Number of connections was treated as a nominal variable to determine its conditional effects. The results showed that when testing the conditional effects of connections for the relationship between SNS hr/day and OPI-O, the 1,000–9,999 connections range was shown to have a positive linear relationship at $p < .05$. For OPI-P, the 0–99 and 1,000–9,999 ranges demonstrated significant positive linear relationships.

In summary, while explanatory power was low, SNS hr/day has a significant impact on optimism and pessimism, and that impact and explanatory power is greater for optimism when controlling for demographics. It was further found that while there are no significant moderating effects, there are significant crossover interactions. The relationship between SNS hr/day and OPI-O and OPI-P is mediated by content, wherein content has a negative partial mediating effect on optimism and a positive partial mediating effect on pessimism. Connections were found to have a positive partial mediating effect on optimism but no significant mediating effect on pessimism at $p < .05$, though there was at $p < .10$. The partial mediating effects for optimism cancel out based on having opposite signs in the indirect effects. According to the global PLS-SEM mediating model, when factoring in all mediating effects, SNS hr/day has a greater positive effect on optimism with greater explanatory power; however, it also has a positive impact on pessimism, although to a lesser degree and with lesser explanatory power.

Interpretation of Findings

This section will present a more technical and statistical discussion on the interpretation of the findings and how the findings may or may not support the hypotheses tested in relation to the research questions. It will also discuss how the findings might confirm, refute, or extend the literature presented in Chapter 2. After the interpretation of the findings, their theoretical, methodological, and practical implications will be presented.

RQ 1: How are OPI optimism and pessimism mean scores distributed based on the degree of SNS use and different demographic and SNS characteristics?

The first research question presented in this study relates to how the predictor, response, control, and moderator/mediator variables were distributed based on descriptive statistics. The resulting descriptive statistics on the distribution of the predictor and response variables for the population showed that on average, participants used social networking sites (SNSs) for 2.37 hr/day, accessed SNSs 6.84 times per day, and had been using SNSs for 12.49 years. The descriptive statistics on the distribution of overall mean scores on OPI showed that participants had a mean OPI-O of 2.84 and a mean OPI-P of 2.29. This data indicates that on average, participants maintained a higher level of optimism than pessimism.

An inspection of the descriptive statistics on distribution by control variable also presents a number of interesting findings. When controlling for gender, females used SNSs more than males by 0.10 hours per day, while males accessed SNSs 0.03 times more per day than females on average. Females had been using SNSs longer than males by 0.43 years on average. OPI mean scores showed that males were more optimistic than females by 0.03 points, while females were more pessimistic by 0.04 points. When inspecting the distribution of the predictor and response variables controlling for race, the results demonstrated that Black participants were the most optimistic, with a mean OPI-O score of 2.96, while the most pessimistic race group was

American Indian or Alaska Native. African American participants were found to have used SNSs the most at 2.99 hr/day and also accessed SNSs the most at 8.04 times per day. Surprisingly, American Indian and Alaska Native participants were found to have been using SNSs the longest on average at 13.5 years, but this mean result issues from a sample group of only four members.

According to the descriptive statistics controlling for educational level, SNS users with a master's degree were found to have the highest OPI-O at 3.01, while associate degree holders had the highest OPI-P at 2.43. People in the other educational group used SNSs the most on average at 3.33 hours per day and also accessed SNSs the most per day at 9.33 times. The educational group using SNSs the longest on average saw a tie between associate degree and trade/technical/vocational training at 12.88 years. Regarding descriptive statistics by age, the age group with the highest OPI-O was 65–74 years old, while the age group with the highest OPI-P was 18–24 years old. The age group using SNSs the most per day was 18–24, with 3.08 hours per day on average. The age group accessing SNSs the most was 25–34 years, with 7.77 times accessed per day. The age group found to have been using SNSs the longest on average was 35–44 years old at 13.79 years.

The descriptive statistics controlling for employment showed a number of interesting patterns. The retired group demonstrated the highest level of OPI-O at 3.01, while the out-of-work and looking-for-work group had the lowest levels of OPI-O at 2.69. Students reported the highest level of OPI-P at 2.46, while the homemaker and retired groups had the lowest OPI-P at 2.07 and 2.08, respectively. On average, students spent the most time on SNSs at 3.22 hours per day, while people who were unable to work spent the least amount of time at 1 hour per day. Students also accessed SNSs more times per day (10.33 times), while people who were unable to

work accessed it the least. On average, self-employed people had been on SNSs the longest, with 13.47 total years, while retired people had the lowest at 10.47.

Descriptive statistics while controlling for income showed that people in the $90,000–$129,000 and 150,000+ groups were the most optimistic at 2.92 and 2.91, respectively, while the $20,000–$49,999 and $50,000–$89,999 groups were the most pessimistic at 2.34 for both. Participants in the $130,000–$149,000 group spent the most amount of time on SNSs at 2.9 hours per day, while the $150,000+ group accessed SNSs more times per day at 7.77 times. The income group that had been on SNSs the longest was the $150,000+ group at 13.35 total years on average.

The descriptive statistics controlling for relationship showed that relationship groups with the highest OPI-O was other at 2.94 and married or domestic partnership at 2.91. The lowest OPI-O was reported in the separated group, with a mean score of 2.67. The relationship group with the highest OPI-P was the other group at 2.44 and widowed at 2.38. The relationship group with the highest use of SNSs on average was the separated group, with 4 hours of SNS use per day, while the single, never married group accessed SNSs the most at 7.15 times. The relationship group with the longest use of SNSs on average was the divorced group, with 13.32 total years. When controlling for main platform, Snap users had the highest OPI-O, with a mean score of 3.03, and also had the highest OPI-P, with a mean score of 2.47. Participants who used Snap as a main SNS also reported the most hours per day of SNS use on average at 4 hours per day. Participants who used Snap as a main platform also reported the highest mean times accessing SNSs per day (11.5 times). Participants that used Facebook as a main platform reported a mean of 13.2 total years, which was the highest of all groups.

The descriptive statistics controlling for main type of content viewed showed that participants who mainly viewed content from friends and family reported the highest mean OPI-O score at 2.93, while the highest OPI-P score was reported from the influencer and celebrity group. The lowest OPI-O score reported was from the group that mainly viewed entertainment content, while the lowest OPI-P group mainly viewed other content. Participants who mainly viewed entertainment content were found to spend the most time on SNSs, reporting 2.84 hours per day on average, while also access SNSs the most per day, reporting 7.42 times. The brand content group reported the longest total years of SNS platform use.

The descriptive statistics controlling for number of SNS connections showed that participants with 10,000–99,999 connections has the highest OPI-O at 3.19, while those with 100,000+ had the lowest OPI-O at 2.28. Participants with 100,000+ connections had the highest OPI-P at 2.44, while those with 10,000–99,999 connections had the lowest OPI-P. People with 10,000–99,999 connections used SNSs the most on average at 3.33 hours per day, while those with 1,000–9,999 connections accessed SNSs the most per day at 8.66 times. People with 10,000–99,999 connections used SNSs the longest on average, with a total of 13.57 years.

The descriptive statistics reported in this study and discussed in this section extend the knowledge of cultivation theory by showing how SNS use predictors and optimism/pessimism response variables are distributed based on a number of demographic characteristics as well as characteristics related to main SNS platform used, main SNS content viewed, and number of SNS connections.

RQ 2: What is the relationship between the degree of SNS use and OPI scale optimism and pessimism mean scores when not controlling and controlling for demographic characteristics?

H1A. The finding of a significant relationship between the degree of SNS use and OPI-O supports Hypothesis H1A. An SLR showed that only SNS hr/day had a significant relationship. The resulting regression summary showed an adjusted R^2 of .021 at $p < .05$ and a B of 0.041 at $p < .05$. The resulting ANOVA statistics for model fit showed SNS hr/day significantly predicted OPI-O, $F(1, 412) = 9.650$, $p < .05$. These results indicated that for each additional hour of SNS use, the resulting OPI-O score will increase by 0.041 points. This is represented by the following formula:

$$\text{Predicted } Y_{\text{OPI-O}} = (2.749) + (0.041 \times B1_{\text{SNS hr/day}}) + \varepsilon$$

These results extend the knowledge cultivation theory by showing how the degree of SNS use positively contributes to optimism based on average hours of SNS use per day when not controlling for demographics and not accounting for the mediating/moderating effects of content, platform, and number of connections. The results show a low association and an explanatory power with an R^2 of .021, meaning that this predictor significantly accounts for 2.1% of the variance. Given that optimism is a psychological construct, it stands to reason that many other variables would contribute to levels of optimism, which is why one might expect to see a low degree of association from the model. The purpose of this hypothesis was to test for a relationship based on SNS use in particular while also giving greater insight into the strength of the relationship in isolation to compare with a model that controls for demographics in a manner based on the literature, which is discussed in the proceeding sections.

H1B. The significant relationship between the degree of SNS use and OPI-P supports Hypothesis H1B, as an SLR showed that only SNS hr/day had a significant relationship. The resulting regression summary showed an adjusted R^2 of .019 at $p < .05$, and a B of 0.046 at $p < .05$. The ANOVA statistics for model fit showed SNS hr/day significantly predicted OPI-P, $F(1,$

412) = 8.963, $p < .05$. The results demonstrated that for each additional hour of SNS use, the resulting OPI-P score would increase by 0.046 points. This is represented by the following formula:

$$\text{Predicted } Y_{\text{OPI-P}} = (2.184) + (0.046 \times B1_{\text{SNS hr/day}}) + \varepsilon$$

These results extend the knowledge cultivation theory by showing how the degree of SNS use positively contributes to pessimism based on average hours of SNS use per day when not controlling for demographics and not accounting for the mediating/moderating effects of content, platform, and number of connections. Since the results show a low association and an explanatory power with an R^2 of .019, this predictor accounts for 1.9% of the variance observed. Given that pessimism is a psychological construct, it stands to reason that many other variables would contribute to levels of pessimism, which is why one might expect to see a low level of association from the model. The purpose of this hypothesis was to test for a relationship based on SNS use in particular while also enlarging understanding about the strength of the relationship in isolation to compare with a model that controls for demographics based on the literature, which will be discussed in the proceeding sections.

H2A. Hypothesis H2A was supported based the significant relationship between the degree of SNS use and OPI-O when controlling for significant demographic variables tested with ANOVA, which were education, $F(8, 405) = 2.304$, $p < .05$, employment, $F(6, 407) = 3.391$, $p < .05$, and relationship, $F(5, 408) = 2.616$, $p < .05$. The resulting regression summary including controls showed an adjusted R^2 of .092 at $p < .05$ and a B of 0.041 at $p < .05$. The reference variables for categorical control variables used in regression were ED – bachelor's degree, employed for wages, and married or domestic partnership. The resulting ANOVA statistics with controls for model fit (ANOVA) showed SNS hr/day significantly predicted OPI-O, $F(20, 393) =$

3.094, $p < .05$. The results demonstrated that for each additional hour of SNS use, the resulting OPI-O score would increase by 0.041 points. This can be represented by the following formula:

$$\text{Predicted } Y_{\text{OPI-O}} = (2.81423) + (0.08273 \times B1_{\text{ED – some college/no degree}}) - (0.12341 \times B1_{\text{ED – associate degree}}) + (0.16880 \times B1_{\text{ED – master's degree}}) - (0.00406 \times B1_{\text{ED – HS graduate}}) + (0.07281 \times B1_{\text{ED – trade/technical/vocational}}) + (0.02144 \times B1_{\text{ED – professional degree}}) + (0.02325 \times B1_{\text{ED – doctorate}}) - (0.35037 \times B1_{\text{ED – other}}) - (0.16134 \times B2_{\text{Self-employed}}) - (0.20615 \times B2_{\text{Out of work and looking for work}}) + (0.13812 \times B2_{\text{Retired}}) + (0.01839 \times B2_{\text{Homemaker}}) - (0.14072 \times B2_{\text{Student}}) + (0.15794 \times B2_{\text{Unable to work}}) - (0.10972 \times B3_{\text{Single, never married}}) - (0.11938 \times B3_{\text{Divorced}}) - (0.11149 \times B3_{\text{Widowed}}) - (0.31627 \times B3_{\text{Separated}}) + (0.00204 \times B3_{\text{Other relationship}}) + (0.04124 \times B4_{\text{SNS hr/day}}) + \varepsilon$$

These results extend the knowledge cultivation theory by showing how the degree of SNS use positively contributes to optimism based on average hours of SNS use per day when controlling for demographics but not accounting for the mediating/moderating effects of content, platform, and number of connections. The results also demonstrate that the significant controls explain more of the variance in the model than the predictor, which supports the seminal works in the literature that also showed controls explained more of the variance. While this indicates that the controls have more predictive power than the actual predictor, it did not weaken the explanatory power of the predictor when controls were added, and the relationship between predictor and response variable remained significant. Since the results show a low association and an explanatory power with an R^2 of .022 from the predictor specifically, this predictor significantly accounts for 2.2% of the variance explained by the model when controlling for significant demographic characteristics. Given that optimism is a psychological construct, it stands to reason that many other variables would contribute to levels of optimism, which is why

one might expect to see a low association from the model. The purpose of this hypothesis was to test for a relationship based on SNS use when controlling for demographics.

H2B. Hypothesis H2B found support due to the significant relationship between the degree of SNS use and OPI-P when controlling for significant a demographic variable tested with ANOVA, which was age, $F(6, 407) = 2.986$, $p < .05$. The resulting regression summary and controls showed an adjusted R^2 of .036 at $p < .05$ and a B of 0.034 at $p < .05$. The reference variable for the categorical control variable used in regression was age: 35–44. The resulting ANOVA statistics with controls for model fit showed SNS hr/day significantly predicted OPI-O, $F(7, 406) = 3.222$, $p < .05$. These results indicate that for each additional hour of SNS use, the resulting OPI-P score would increase by 0.036 points. This is represented by the following formula:

$$\text{Predicted } Y_{\text{OPI-P}} = (2.24952) + (0.00280 \times B1_{\text{Age: 25–34}}) - (0.08270 \times B1_{\text{Age: 45–54}}) - (0.14853 \times B1_{\text{Age: 55–64}}) + (0.12128 \times B1_{\text{Age: 18–24}}) - (0.26420 \times B1_{\text{Age: 65–74}}) - (0.39304 \times B1_{\text{Age: 75+}}) + (0.03353 \times B2_{\text{SNS hr/day}}) + \varepsilon$$

These results extend the knowledge of cultivation theory by showing how the degree of SNS use positively contributes to pessimism based on average hours of SNS use per day when controlling for demographics but not accounting for the mediating/moderating effects of content, platform, and number of connections. The results also demonstrate that the significant controls explain more of the variance in the model than the predictor, which supports the seminal works in the literature that also showed controls explained more of the variance. While this means that the controls had more predictive power than the actual predictor, it also weakened the explanatory power of the predictor when controls were added, but the relationship between predictor and response variable remained significant. As the results show a low association and

an explanatory power with an R^2 of .010 specifically from the predictor, this predictor significantly accounts for 1.0% of the variance explained by the model when controlling for significant demographic characteristics. Given that pessimism is a psychological construct, it stands to reason that many other variables would contribute to levels of optimism, which is why one might expect to see a low association resulting from the model.

RQ 3: When controlling for demographics, does the degree of SNS use have a greater effect on optimism or pessimism?

When building the regression model to test for a relationship between the predictor variables (SNS hr/day, SNS access/day, and SNS total years) the outcome for both response variables (OPI-O and OPI-P) using stepwise MLR without controls showed that only SNS hr/day had a statistically significant relationship with both response variables. Thus, SNS hr/day was the only predictor variable used when developing the regression model that included controls. Based on the results discussed above regarding RQ 2, when testing for a relationship between the degree of SNS use and OPI-O and OPI-P without controls, it was found that SNS hr/day had a slightly greater impact on OPI-P, with a B of 0.046 and adjusted R^2 of .019, $p < .05$. However, there was greater explanatory power with OPI-O, with a B of 0.041 and adjusted R^2 of .021, $p < .05$. When testing for significant demographic controls to add to the model for hierarchical regression, the resulting ANOVA summaries showed that for OPI-O, only education, employment, and relationship were significant controls, while age was the only significant control for OPI-P.

When conducting hierarchical regression using the significant demographic controls found from the ANOVA tests, the resulting regression summaries showed that when significant controls were added to the model, demographic controls increased and explained more of the

explanatory power of the model for OPI-O and OPI-P. However, for OPI-O, the contribution of the predictor variable SNS hr/day remained significant and the adjusted R^2 and *B* remained the same. For OPI-P, it was determined that the demographic control of age increased and explained more of the variance in the model while also weakening the explanatory power and *B* of the predictor SNS hr/day, and the adjusted R^2 contributed from the predictor dropped to .010 from .019, while the *B* reduced from 0.046 to 0.041. These results demonstrate that when significant demographic controls are added to the model, degree of use has a greater positive impact on OPI-O than OPI-P while also having more explanatory power. While demographic controls impact the variance in the model, the relationship between the predictor and response variables remained significant for both OPI-O and OPI-P.

The results discussed in this section extended the knowledge of the cultivation theory literature by showing how the degree of SNS use impacts user attitudes in that the degree of SNS use can have a positive and negative impact simultaneously. In this study, it was found that degree of SNS use, when controlling for demographics, has a greater positive impact on attitudes based on the finding that optimism increases at a higher rate than pessimism for each additional hour of SNS use. Also, it was shown that greater explanatory power was indicated for the relationship between degree of SNS use and OPI-O. It is interesting to note here that many studies focus on either the positives or the negatives of SNS use and the findings here are typically supported in those studies. This study supports the literature in that it determined that the degree of SNS increases both positive and negative attitudes. However, this study also shows that there is a greater impact on positive attitudes than negative ones.

RQ 4: What are the moderating effects of the primary SNS platform used, primary SNS content viewed, and number of SNS connections on the relationship between the degree of SNS use and OPI optimism and pessimism scores?

H3A. The findings in this study do not support Hypothesis 3A because they did not indicate a significant unconditional interaction of the moderator main platform on the relationship between SNS hr/day and OPI-O at $p < .05$. However, it was found that the unconditional interaction was significant at $p < .10$. While the nominal categorical variable represented by main platform was not a significant moderator, there was a crossover interaction with the group Twitter on the relationship between SNS hr/day and OPI-O, with a B of −0.0234, $p < .05$. The findings related to this hypothesis extend the knowledge of cultivation theory literature in which SNSs are the medium under study by demonstrating that main SNS platform used does not moderate the relationship between degree of SNS use and attitudes such as optimism.

H3B. Hypothesis 3B was not supported by this study, as it did not find a significant unconditional interaction of the moderator main type of content viewed on the relationship between SNS hr/day and OPI-O at $p < .05$. While the unconditional interaction of the moderator was not significant and there were no significant crossover interactions between the categorical groups on the relationship between SNS hr/day and OPI-O at $p < .05$, there was a significant crossover interaction with the categorical group other content at $B = −0.1073$, $p < .10$. The findings related to this hypothesis extend the knowledge of cultivation theory literature where SNSs are the medium under consideration by demonstrating that main SNS content viewed does not moderate the relationship between degree of SNS use and attitudes such as optimism.

H3C. Hypothesis 3C did not find support in this study, as there was no significant unconditional interaction of the moderator number of connections on the relationship between SNS hr/day and OPI-O at $p < .05$. The findings related to this hypothesis extend the knowledge of cultivation theory literature where SNSs are the medium under study by demonstrating that number of SNS connections does not moderate the relationship between degree of SNS use and attitudes such as optimism.

H4A. The results here do not support Hypothesis 4A, as there was no finding of a significant unconditional interaction of the moderator main platform on the relationship between SNS hr/day and OPI-P at $p < .05$. There were also no crossover interactions between categorical groups on the relationship between SNS hr/day and OPI-P at $p < .05$. The findings on this hypothesis extend the knowledge of cultivation theory literature where SNSs are the medium by demonstrating that main SNS platform used does not moderate the relationship between degree of SNS use and attitudes such as pessimism.

H4B. Hypothesis 4B was not supported based on the lack of a significant unconditional interaction of the moderator main type of content viewed on the relationship between SNS hr/day and OPI-P at $p < .05$. However, it was found that the unconditional interaction was significant at $p < .10$. While the unconditional interaction of the moderator was not significant on the relationship between SNS hr/day and OPI-O at $p < .05$, there were significant crossover interactions with the categorical groups entertainment and brand content, with a B of -0.0769, $p < .05$ and $B = -.1623$, $p < .05$, respectively. Furthermore, news content had a significant crossover interaction, with a B of -0.0785, $p < .10$. The findings related to this hypothesis extend the knowledge of cultivation theory literature in which SNSs are the medium by demonstrating

that main SNS content viewed does not moderate the relationship between degree of SNS use and attitudes such as pessimism.

H4C. Hypothesis 4C is not supported based on the research here not finding significant unconditional interaction of the moderator number of connections on the relationship between SNS hr/day and OPI-P at $p < .05$. The findings of this hypothesis extend the knowledge of cultivation theory literature in which SNSs are the medium by demonstrating that number of SNS connections does not moderate the relationship between degree of SNS use and attitudes such as pessimism.

RQ 5: What are the mediating effects of the primary SNS platform used, primary SNS content viewed, and the number of SNS connections on the relationship between the degree of SNS use and OPI optimism and pessimism scores?

H5A. Study findings did not support Hypothesis 5A based on the determination that main platform used did not mediate the relationship between SNS use hr/day and OPI-O. When determining whether there is a full or partial mediating effect of a variable on the relationship between two other variables, researchers look for a significant total indirect effect. The results, however, showed an insignificant indirect effect, $\beta = 0.012$, $t = 0.925$, $p > .05$. Further, there were no significant specific indirect effects of any of any of the groups within the relevant category. This result contributes to the literature in that PLS-SEM models were used to determine the mediating effects of a polytomous categorical variable on the relationship between a degree of use predictor for SNS and the response variable of optimism whereby main platform does not demonstrate a significant mediating effect.

H5B. Hypothesis 5B was supported based on the finding that main SNS content viewed mediated the relationship between SNS use hr/day and OPI-O. When determining whether there

is a full or partial mediating effect of a variable on the relationship between two other variables, researchers look for a significant total indirect effect, and the results here showed a significant negative total indirect effect ($\beta = -0.040$, $t = 2.453$, $p < .05$). Since the total effect was significant after the inclusion of the mediator, the results demonstrated a partial negative mediating effect as a result of from main content viewed. Further, there was a significant specific indirect effect from entertainment content ($\beta = -0.048$, $t = 2.953$, $p < .05$), which demonstrates that entertainment content has a lower impact than the reference variable of friends and family content. This result adds to the literature in that PLS-SEM models were used to determine the mediating effects of a polytomous categorical variable on the relationship between a degree of use predictor for SNS and the response variable of optimism whereby main content viewed demonstrated a significant partial mediating effect. The results also extended the knowledge of the cultivation literature by demonstrating that main SNS content as a general construct has a negative partial mediating effect on the relationship between degree of SNS use and OPI-O.

H5C. The results supported Hypothesis 5C, as the main SNS number of connections mediated the relationship between SNS use hr/day and OPI-O. When determining if there is a full or partial mediating effect of a variable on the relationship between two other variables, researchers look to have a significant total indirect effect, and the results showed a significant negative total indirect effect ($\beta = 0.028$, $t = 2.264$, $p < .05$). As the total effect being significant after inclusion of the mediator, the results demonstrated a partial positive mediating effect resulting from number of connections. This extends the body of knowledge in the literature in that PLS-SEM models were used to determine the mediating effects of a rank order variable on the relationship between a degree of use predictor for SNS and a response variable represented by the psychological construct of optimism whereby number of connections demonstrated a

significant partial mediating effect. The results also advance the cultivation literature by demonstrating that number of connections has a positive partial mediating effect on the relationship between degree of SNS use and OPI-O. This result may lend support to literature that has found positive effects of SNS use due to social connectedness by finding a partial positive mediating effect from number of SNS connections.

H6A. Hypothesis 6A was not supported, as it was found that main platform used did not mediate the relationship between SNS use hr/day and OPI-P. When determining whether there is a full or partial mediating effect of a variable on the relationship between two other variables, researchers look for a significant total indirect effect, and the results here only showed an insignificant total indirect effect ($\beta = -0.000$, $t = 0.018$, $p > .05$). Further, there were no significant specific indirect effects of any of any of the groups in the category. This contributes to the literature in that PLS-SEM models were used to determine the mediating effects of a polytomous categorical variable on the relationship between a degree of use predictor for SNSs and a response variable, the psychological construct of pessimism, whereby main platform does not demonstrate a significant mediating effect.

H6B. Hypothesis 6B was supported based on the determination that main SNS content viewed mediated the relationship between SNS use hr/day and OPI-P. When determining whether there is a full or partial mediating effect of a variable on the relationship between two other variables, researchers look for a significant total indirect effect, and the results here showed a significant negative total indirect effect ($\beta = .034$, $t = 2.559$, $p < .05$). Due to the total effect being significant after inclusion of the mediator, the results demonstrated a partial negative mediating effect from main content viewed. Further, there was a significant specific indirect effect from entertainment content ($\beta = .025$, $t = 2.099$, $p < .05$), which shows that entertainment

content has a higher impact than the reference variable of friends and family content. This result adds to the literature in that PLS-SEM models were used to determine the mediating effects of a polytomous categorical variable on the relationship between a degree of use predictor for SNS and a response variable represented by the psychological construct of pessimism, and main content viewed demonstrated a significant partial mediating effect. The results also extended the knowledge of the cultivation literature by demonstrating that main SNS content as a general construct has a positive partial mediating effect on the relationship between degree of SNS use and OPI-P.

H6C. Results did not support Hypothesis 6C, as the number of SNS connections did not significantly mediate the relationship between SNS hr/day and OPI-O. When determining whether there is a full or partial mediating effect of a variable on the relationship between two other variables, researchers look for a significant total indirect effect. The results of this study showed an insignificant negative total indirect effect ($\beta = -0.017$, $t = 1.925$, $p > .05$); however, the result was significant at $p < .10$. Based on the insignificant result, it was determined that number of SNS connections does not mediate the relationship between degree of SNS use and OPI-P. This result extends the understanding of the literature in that PLS-SEM models were used to determine the mediating effects of a rank order variable on the relationship between a degree of use predictor for SNS and the response variable of pessimism, and number of connections had an insignificant effect.

RQ 6: What are the conditional effects of main SNS platform, type of SNS content viewed, and number of SNS connections in predicting optimism and pessimism based on degree of SNS use?

A series of simple linear regressions were conducted, segmenting the data for main platform type, main content viewed, and number of connections to better understand the conditional effects of each group. In doing so, the impact of the degree of SNS use on optimism and pessimism based on SNS hr/day used was captured. After conducting analyses to understand the conditional effects of main platform on OPI-O, the only significant result was Twitter, with a B of 0.11, $p < .05$, and an adjusted R^2 of .10, which indicates that for each additional hour of SNS use by people who use Twitter as a main SNS platform, it is predicted that OPI-O would increase by 0.11 while accounting for 10% of the variance explained by the model. For OPI-P, the only significant group was Facebook, with a B of 0.06, $p < .05$, and adjusted R^2 of .03, which demonstrates that for each additional hour of SNS use of Facebook users, it is predicted that OPI-P would increase by 0.06 while accounting for 3% percent of variance explained by the model.

When determining the conditional effects of main content viewed on the relationship between degree of SNS use and OPI-O, friends and family content and entertainment content were significant at $p < .05$, and news content was significant at $p < .10$. For friends and family content, the B was 0.05, $p < .05$, with an adjusted R^2 of .02, while entertainment content had a B of 0.07, $p < .05$, with an adjusted R^2 of .07. These results indicated that for each additional hour of SNS use, OPI-O would increase by 0.05 for people who mainly view friends and family content, while people who mainly viewed entertainment content are predicted to have an increase of 0.07 in OPI-O. For OPI-P, only friends and family content were significant at $p < .05$, while influencer and celebrity content were significant at $p < .10$. Friends and family content had a B of 0.08, $p < .05$, with an adjusted R^2 of .05, indicating that for each hour of additional SNS use OPI-P is predicted to increase by 0.08 while accounting for 5% of the variation explained by the

model. Based on the results presented, for people who mainly view friends and family content on SNSs, OPI-P increases more than OPI-O for each additional hour of use by 0.03 points. This result seems to support the literature in the finding that increased SNS use improves positive attitudes. But it also seems to refute the same literature when accounting for negative attitudes based on a larger increase in pessimism than optimism for each additional hour of use.

Regarding the conditional effects of number of SNS connections on the relationship between degree of SNS use and OPI-O, only the 1,000–9,999 connection range was significant, with a B of 0.06, $p < .05$, and an adjusted R^2 of .04. The 0–99 connection range was significant at $p < .10$. The results indicated that for the 1,000–9,999 connection range, for every hour of additional SNS use, OPI-O is predicted to increase by 0.06 points, with 4% of the variance explained by the model. With OPI-P, the 0–99 connection range and the 1,000–9,999 connection range were both significant at $p < .05$. The 0–99 range had a B of 0.06, $p < .05$, with an adjusted R^2 of .03, indicating that for each additional hour of SNS use for this range, OPI-P would increase by 0.06 while accounting for 3% percent of the variance explained by model. For the 1,000–9,999 range, there was a B of 0.09, $p < .05$, with an adjusted R^2 of .08, which indicates that for each additional hour of SNS use, OPI-P increases by 0.09 while accounted for 8% of the variance explained by the model.

These results demonstrate that, at least for the 1,000–9,999 SNS connection range, each additional hour of SNS use increases pessimism at a higher rate than optimism for each additional hour of SNS use and that there is more explanatory power with OPI-P. For the 1,000–9,999 connection range, the evidence presented seems to refute the theory that increased SNS use increases positive social perceptions due to social connectedness. While the B increases for OPI-O and OPI-P as the number of SNS connections increase, OPI-P increases at a higher rate,

indicating that there is more increase in negative attitudes than positive attitudes as SNS connections increase and as SNS use increases.

Implications

In the following sections, a brief review of the pertinent literature discussed in Chapter 2 will be presented as it relates to the results found in this study in addition to how the findings in this study extend, support, or refute the literature. The theoretical, methodological, and practical implications will also be discussed.

Theoretical

The results of this study lead to a number of theoretical implications. The original premise of cultivation theory was based on an interest in understanding how the degree of exposure to mass-mediated messages has the potential to affect perceptions. Tandem to this understanding is the fact that George Gerbner, who developed the theory, had conducted content analysis of prime-time television over a series of decades to understand central themes in the content, which resulted in the discovery that violence and criminality are overrepresented in television media. This led to the assumption that increased television viewership may result in skewed perceptions of crime and violence. The results of initial studies confirmed this assumption, though with weak association and low explanatory power. Early critics note that fallacies in Gerbner's methods, which resulted in Gerbner including controls and testing for additional relationships. Fast-forward to today, and one can see that cultivation theory has recently enlivened interest with communication researchers as it relates to SNSs, and they have applied cultivation analysis to the degree of SNS use.

A number of recent studies have examined the relationship between the degree of SNS use and attitudes toward self-efficacy in undergraduate students (McNallie et al., 2020), attitudes

toward minorities (Hermann et al., 2020), and attitudes toward the body image of self and others (Stein et al., 2021). The results of this study support the literature in that a relationship between a predictor variable representing degree of SNS use and a response variable representing attitudes, in this case, optimism and pessimism, was tested and found to be significant. The results of this study also extend the knowledge about research involving the relationship between the degree of SNS use and positive and negative psychological states, such as optimism and pessimism, since it was found in this study that the degree of SNS use has a greater positive impact on optimism along with more explanatory power.

Similarly, in the psychology literature, where cultivation theory was not presented but the relationship between the degree of SNS use and measures of psychological characteristics were tested, showed that increased SNS use resulted in the development of depression as well as increased levels of depression as SNS use increased (Brunborg & Andreas, 2019; Keles et al., 2020). However, one study showed that increased SNS use resulted in higher levels of trust and social association (Ostic et al., 2021). This study supports both of these directions in the literature since it found that increased SNS use resulted in both an increase in optimism and pessimism. A key caveat here is that optimism increases at a higher rate than pessimism when controlling for significant demographic controls. Thus, while this study provides support for the findings of previous studies, it also extends the knowledge of the field in showing that when accounting for both the positive and negative psychological characteristics, positive psychological states are more positively affected.

In the cultivation literature that tested for the relationship between degree of SNS use and scores on the friendly world scale (FWS), there was a significant positive relationship between increased SNS use and mean scores on the FWS, which Sestir (2020) noted resulted in increased

trust in society. The findings of this study provide support for Sestir's findings in that increased SNS use was significantly positively correlated with OPI-O both when not controlling and controlling for demographics. Further, in the psychological literature, Ostic et al. (2021) found that increased SNS use resulted in increased trust and social associations. The findings in this study may also support these conclusions in that optimism is associated with trust (Barnett & Anderson, 2020). While previous studies did not analyze the number of connections in relation to mediating effects, the findings of this study showed that number of connections was a partial positive mediator with optimism, indicating that increased social connectedness increases optimism in relation to the degree of use, which lends support to both Sestir (2020) and Ostic et al (2021).

However, when looking specifically at the conditional effects of number of social connections, it was found that pessimism increased at a higher rate than optimism for the group 1,000–9,999 SNS connections. This may not necessarily refute the literature related to how social connectedness results in increased positive psychological characteristic based on degree of use, given that it was conditional and the entire construct was a partial positive mediator; however, it is worth noting that specific ranges of social connections may result in different outcomes, requiring further examination.

In the cultivation literature involving the degree of SNS use and impact on variables representing a psychological construct, it has been shown that there are both positive and negative relationships resulting from the degree of SNS use. However, in these studies, what is often left out or not examined in more detail is the role that content plays in mediating or moderating the relationship between degree of SNS use and a response variable representing attitudes, beliefs, perceptions, and so on. Considering how content was a pivotal component in

the development of cultivation theory, it is important for researchers to consider this element when determining the cultivation effects of SNS exposure on the user depending on the degree of use. The findings from this study were that content was a negative partial mediator to optimism and a partial positive mediator to pessimism. When accounting for mediation using SEM, there were similar findings for regression in that SNS use had a greater positive impact on optimism than pessimism. This entails that while increased SNS use contributes to both, optimism increases at a higher rate as SNS use goes up.

Methodological

Initial research methods in cultivation theory involved the use of some form of regression analysis to determine the relationship between viewership and scores on a psychological scale measuring perceptions. In later studies involving television as well as more current studies looking at SNSs as a primary medium, regression analyses were still employed to determine similar relationships where a predictor variable, representing degree of use of the medium and some response variable(s), was tested to understand the impact exposure has on the response variable, i.e., the cultivation effect. This study implemented the same methods; however, instead of using ranges to represent viewership or degree of use, continuous integer data was collected to determine a more statistically accurate result. For example, average hours per day of SNS use was used to represent degree of use instead of a range so that predictions could be made based on significant results.

Following on the seminal works by Hughes (1980) and Hirsch (1980) noting the importance of controls in testing statistical power and significant relationships, regression analysis was conducted to understand the impact of the predictor with and without controls, and it obtained a significant result. Similar to the findings of Hughes and Hirsch, control variables

accounted for more of the variance explained in the model, and at least for pessimism, weakened the explanatory power of the predictor and reduced the *B*. However, while the explanatory power was not high, the result was significant. These findings support the critical works in showing the importance of including demographic controls to better understand the power of the predictors being used in the model when discussing their significance.

While it is common in the literature that some form of regression is used in cultivation analysis to understand the relationship between a degree of exposure predictor and some response variable related to a perception, belief, or attitude, less commonly seen is the use of bootstrapping and/or SEM to test for the significance and understand the impact of moderators/mediators on the relationship between the predictor and response variables. This study presents a method that researchers can employ with PROCESS in SPSS to test for the moderating effects of a polytomous categorical variable on the relationship between degree of SNS use and attitudes. Also, this study presents how SmartPLS4 can be used to test for the simple mediating effects and global mediating effects of a polytomous categorical variable and rank order variable on the relationship between a degree of SNS use predictor and attitude constructs represented by optimism and pessimism. The use of these platforms in this manner extends the literature by urging researchers to develop bootstrapped SEM models to determine the mediating effects of content on the relationship between degree of SNS use and attitudes.

Practical

Based on this study's results, increased SNS use is significantly related to positive increases in both optimism and pessimism, while content is a partial negative mediator for optimism, and number of connections is a partial positive mediator of optimism. It was also found that content is a partial positive mediator of pessimism, while number of connections was

not significant as a mediator for this response variable. As such, it is important for policymakers, platform developers, and academic researchers to further understand the impact that exposure to SNS content has on the SNS user. While, as a construct, content imposes negative psychological effects by decreasing optimism and increasing pessimism based on the degree of use, it was not possible to determine how specific types of content act as mediators based on the nature of the analyses and the limitations of those analyses. As such, this topic deserves further research.

The results of the different models and methods tested reveal that both optimism and pessimism increase as a result of increased SNS use. Optimism increases at a faster rate, with the exception that pessimism increases slightly more when not controlling for demographics, though with a weaker explanatory power. However, while optimism may increase faster than pessimism, there is still an increase in pessimism, which can contribute to the development and increase of depressive symptoms. Given this possibility, policymakers and platform developers should consider how to mitigate these psychological risks to SNS users based on the available academic and user data. There is an opportunity for researchers to further define the simultaneous impacts of SNS use on both positive and negative psychological cultivation in future research, which will be discussed in a later section. It is important for organizations to consider impact content has on cultivating certain attitudes when developing content, especially brands when advertising.

Delimitations and Limitations

There were a number of delimitations in this study. A purposive sample was used, which required that participants be 18+ years of age, live in the United States, and be active users of SNSs for at least one year. These conditions were set based on the need for participants to be able to accurately comprehend the nature of the study and to ensure that the participants were able to decide for themselves whether or not they wanted to participate. Further, participants

were required live in the United States to ensure that participants were exposed to the same type of government regulations and conditions of use around SNSs. Another reason for this requirement was to address a gap in the literature by employing a U.S. population in a cultivation study to determine the relationship between degree of SNS use and attitudes. The requirement that participants had at least one active year of exposure to SNS platforms and were still actively using them was to ensure that users had adequate exposure to SNSs, which is an important aspect of cultivation.

There were a number of limitations of this study. Regarding delimitations, the results of the study are not generalizable to the overall population due to the intentional exclusion of adolescents from the sample. However, based on meeting the requirements for generalizability by having 400+ participants, this study may be generalized to a specific group, such as 18+ adults in the United States that have been using SNS actively for at least 1 year. Also, this study had a correlational, quantitative design, and while some aspects of the analyses involved causative statistical methods, such as SEM, the reason for using those methods was to understand the correlations and relationships between variables, not to determine causation. Thus, when interpreting the results, it is important to keep in mind that the correlations are not causation, and while significant correlations are present, it does not mean that causation is as well.

Another limitation of the study involved the ability to understand the moderating and mediating effects of specific platforms and types of content on the relationship between degree of SNS use and OPI-O and OPI-P. Due these moderator/mediator variables being polytomous categorical variables, researchers must select a reference variable when conducting analyses, representing the slope. As such, when interpreting regression or bootstrapping results with SEM models, the *B* only signifies whether or not the variables have a significantly higher or lower

effect than the reference variable and not the actual impact of the variable individually. As such, interpretation of platform or content as a mediator was limited to understanding the mediating/moderating effects of the categorical variable as a construct and not individual groups. However, there is a method that can be used to address this limitation in future studies, which will be discussed in the next section. Due to the limitations involved in using categorical variables in PROCESS and SmartPLS4, there was also an additional limitation, which resulted in a delimitation. This delimitation was the choice to exclude controls from moderation/mediation analyses.

While it is possible to include covariates in PROCESS when conducting moderation analyses, and also in SmartPLS4 when conducting mediation analyses, the use of categorical moderators/mediators as well as categorical controls would have convoluted the parsimony of the resulting analyses. As such, it was decided to exclude controls for these analyses to allow for a better understanding of the effects of moderation and mediation.

A final limitation of this study was that accuracy of the data is limited to the perceptions of the user—i.e., it is not objective data. For example, users reported what they consider to be the main platform they use, the main content they view, and the number of connections they have. Whether or not they reported this accurately cannot be confirmed, and this must be considered when interpreting the accuracy and reliability of the results.

Recommendations for Future Research

Based on the findings of this study, there are a number of opportunities for future research. The means of the variables were presented with the descriptive statistics presented in Chapter 4, exhibiting clear differences between the means of gender, race, age, employment, and so on. It is recommended that future researchers more closely examine the conditional effects of

different demographic characteristics as well as the mediating/moderating effects of these variables. While these variables were controls in this study, they can also be used as mediators and moderators when conducting studies to determine the relationship between the degree of SNS use and attitudes, perceptions, or beliefs. This would provide valuable insight into how different genders, races, and age groups, for example, are disparately impacted, if at all, based on degree of SNS use.

Although a fitting degree of SNS use variable was chosen in average hours per day used, it is recommended that future researchers consider using minutes instead of hours to see how such a change would affect the results. While the recommendations of recent literature were followed in using a continuous variable instead of a range to represent degree of use, it would be beneficial to see how the mean of responses might differ when using a more refined integer, such as minutes. For example, the mean of the sample for SNS hr/day used was 2.37 hours, which is approximately 140–150 minutes.

Further, while SNS hr/day used was a significant predictor, the association variance explained by the model was low. As such, there is room to improve this model by either developing a more robust predictor or set of predictors to measure degree of use, and/or also considering what other predictors can be used along with additional confounders/covariates beyond just demographic control variables. In this study, it was determined that content was a partial mediator of both optimism and pessimism, but I was not able to go beyond the overall construct into specific types of content due to limitations in the structure of the variables as well as the type of analyses being conducted. As a result, future researchers should consider developing complex construct variables for each type of content so that the individual variables representing types of content can be used to understand the moderating/mediating effects of

specific types of content individually as opposed to needing to be compared to a reference variable.

In the simple mediation, moderation, and conditional effects analyses in this study, there were some groups within categories that did not have enough participants to allow for the analyses to be carried out unless these groups were excluded. Regression was unable to be conducted for some groups when determining the conditional effects of SNS variables due to a small sample size. As such, it is recommended that future researchers, who may seek to conduct a replicative or similar study, also acquire a larger sample size. While this study had 400+ participants, allowing for significance and specific generalizability, the groups within specific categories were often too small. A larger sample size would allow for more refined analyses for higher accuracy and statistical significance while also preventing the need to exclude certain categorical groups.

Significance of the Study

This study is significant in that it (a) advances the theory of cultivation in application to the use of SNSs, which is becoming a primary avenue for information and engagement; (b) it advances the understanding needed by policymakers, platform developers, and users in determining what regulations should be implemented to protect users and improve platform features as well as clarifying how SNSs can be used to positively or negatively affect the attitudes of consumers; (c) and finally, this study is significant in that it fills a gap in the literature by determining how the degree of SNS use may impact user attitudes.

This study advances cultivation theory by showing how the degree of SNS use impacts the attitudes of users and to what extent as well as how type of platform, content, and number of connections moderates and/or mediates this impact. By collecting measures of

optimism/pessimism of users and collecting data on the degree of SNS use, the relationship between the degree of SNS use and measures of optimism/pessimism were determined. Based on the results, I was able to demonstrate support for the impacts of SNS use on the user and inform the direction of future studies that may look at specific SNS platforms, SNS content, or number of SNS connections.

This study advances practice by informing policymakers, platform developers, and researchers, who are likely SNS users themselves, of the potential impacts of the degree of SNS use on the mindset and attitudes of users. With this information, relevant parties can make better-informed decisions when developing regulations for SNS platform developers, and SNS developers can improve platform functionality for its users. By understanding how SNSs impact attitudes, SNS developers can seek to develop ways to avoid detrimental impacts on the minds of users, especially younger and more impressionable ones.

Finally, the primary problem that was addressed here related to filling a gap in the literature, if only partially, by determining whether the degree of SNS use impacted the attitudes of users and how platform, content, and number of connections moderates/mediates this impact. By measuring optimism and pessimism in users and the degree of SNS use, a significant relationship was determined, and it was found that this relationship is mediated by content and connections. These results help provide a more solid understanding of how SNS use impacts users, and this can aid in informing and direct future studies.

Concluding Statement

This study was conducted to determine the relationship between the degree of SNS use and two response variables representing attitudes, such as optimism and pessimism. The purpose this study was to fill a gap in the literature by determining the type of relationship and also how

the degree of SNS use simultaneously impacts positive and negative psychological constructs while accounting for type of platform, type of content, and number of connections. A correlational, quantitative method was chosen, and data was collected using a cross-sectional analytical survey. To answer the research questions and test the hypotheses, a number of analyses were conducted, such as descriptive statistics, testing the assumptions of MLR, stepwise and hierarchical regression, ANOVA, SPSS PROCESS outputs for moderation, SmartPLS4 PLS-SEM models for mediation, and simple linear regression to understand conditional effects.

The resulting analysis demonstrated that degree of SNS use, represented by SNS hr/day, significantly affects both optimism (OPI-O) and pessimism (OPI-P). When controlling for demographics, SNS hr/day predicted a greater effect on OPI-O than OPI-P with greater explanatory power while also demonstrating that the demographic controls contributed to more of the variance explained by the model, though the predictors remained significant. The results also demonstrated a low association and explanatory power, showing room for improvement in the model. The results of moderation and mediation analyses demonstrated that while there were no significant moderators, there were significant crossover interactions of specific groups within the categories. Further, it was found that main type of content and number of connections acted as partial mediators for OPI-O, while main type of content acted as a partial mediator for OPI-P.

An interpretation of the results found that there was support for the previous literature in that increased SNS used contributed to increased depressive symptoms. In contrast, support was also found for the cultivation theory and psychological literature, as increased SNS use resulted in positive psychological outcomes such as increased trust in society and social association. This research contributes to the literature by being an original study of the chosen variables and also by simultaneously determining the relationship between degree of use as a predictor and two

separate positive and negative psychological constructs to understand which one was impacted more. Significant results were found that demonstrated a positive linear relationship with both response variables but a greater impact on optimism, even when factoring in the mediating effects of content and number of connections.

Delimitations and limitations were presented, which related to the use of a convenience sample and the decision to use a continuous predictor represented by an integer. Limitations were also presented related to the ability to analyze the mediating effects of specific groups more deeply within categories in addition to limitations related to the accuracy of the data since it is based on user perceptions. Recommendations were presented for future research regarding a method for attaining a more refined understanding of how different types of content mediate the relationship between SNS use and attitudes. The significance of the study was also presented, which resulted in a number of implications related to furthering theoretical, methodological, and practical understanding for policymakers, platform developers, and researchers.

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Appendix A: Survey Instrument

Demographics Form

Instructions: Please answer the following questions.

1. What is your Gender?

2. What is your Ethnicity?

3. What is your level of Education?

4. What is your Age?

5. What is your type of Employment?

6. What is your Household Income?

7. What is your Marital Status?

Social Networking Site (SNS) Use Form

Instructions: Please answer the following questions.

1. What social networking site (SNS) do you use the most?

2. What is the main reason you use SNS?

3. What type of content do you see the most of?

4. How many social platforms do you use?

5. How many connections do you have on SNS?

6. How many hours per day on average do you use social networking sites?

7. How many times per day do you access social networking sites?

8. How many years have you used social networking sites?

Optimism/Pessimism Instrument (OPI)

Instructions: The 56 statements below represent individual differences in viewpoint. Using the scale shown below, please respond with your own point of view to all the statements: for example, if you strongly agree with a statement then circle 1 (S.A.). Do not spend a lot of time

thinking about each one; just indicate your first impression. Remember, respond to these statements according to how you feel about them right now.

1 – Strongly Agree
2 – Agree
3 – Disagree
4 – Strongly Disagree

1. I like the people I get to know. (+)

2. It is best not to set your hopes too high since you will probably be disappointed. (-)

3. There is so much to be done and so little time to do it in. (-)

4. I have a tendency to make mountains out of molehills. (-)

5. Rarely do I expect good things to happen. (-)

6. Everything changes so quickly these days that I often have trouble deciding which are the right rules to follow.

7. All in all the world is a good place. (+)

8. When it comes to my future plans and ambitions in life, I expect more things to go wrong than right. (-)

9. My hardest battles are with myself.

10. I believe there's not much hope for the human race. (-)

11. It does not take me long to shake off a bad mood. (+)

12. If you hope and wish for something long and hard enough, you will eventually get it. (+)

13. People get ahead by using 'pull' and not because of what they know. (-)

14. Even when things in my life are going okay, I expect them to get worse soon. (-)

15. With enough faith, you can do almost anything. (+)

16. I enjoy myself most when I am alone, away from other people.

17. When I undertake something new, I expect to succeed.

18. Honesty is the best policy in all cases.

19. I generally look at the brighter side of life.

20. If I make a decision on my own, I can pretty much count on the fact that it will turn out to be a poor one. (-)

21. I generally make light of my problems. (+)

22. It is always good to be frank.

23. Where there is a will, there is a way. (+)

24. I have a tendency to blow up problems so they seem worse than they really are. (-)

25. All in all, it is better to be humble and honest than important and dishonest.

26. As time goes on, things will most likely get worse. (-)

27. It is the slow, steady worker who usually accomplishes the most in the end.

28. When I go to a party, I expect to have fun. (+)

29. Times are getting better. (+)

30. Everyone should have an equal chance and an equal say.

31. Better to expect defeat: then it doesn't hit so hard when it comes. (-)

32. It is wise to flatter important people.

33. I expect to achieve most of the things I want in life. (+)

34. It seems the cards of life are stacked against me. (-)

35. What is lacking in the world today is the old kind of friendship that last for a lifetime.

36. When the weatherman predicts 50% chance of rain, you might as well count on seeing rain. (-)

37. Before an interview, I am usually confident things will go well. (+)

38. Sometimes I feel down, but I bounce right back again. (+)

39. The future seems too uncertain for people to make serious plans.

40. When I have undertaken a task, I find it difficult to set it aside even for a short time.

41. Tenderness is more important than love.

42. When gambling, I expect to lose. (-)

43. Anybody who is willing to work hard has a good chance for success. (+)

44. The future looks very dismal. (-)

45. If I had to choose between happiness and greatness, I'd choose greatness.

46. Minor setbacks are something I usually ignore. (+)

47. In general, things turn out all right in the end. (+)

48. It is better to be a dead hero than a live coward.

49. Give me 50/50 odds and I will choose the wrong answer every time. (-)

50. It is hard to get ahead without cutting corners here and there.

51. If I were in competition and contestants were narrowed down to myself and one other person, I would expect to be runner-up. (-)

52. April showers bring may flowers. (+)

53. I can be comfortable with nearly all kinds of people. (+)

54. The worst defeats come after the best victories.

55. In the history of the human race there have probably been just a handful of really great thinkers.

56. Every cloud has a silver lining. (+)

Appendix B: Email for Permission to Use OPI Scale

Requesting Permission to Use Optimism/Pessimism Instrument

JS

Joshua Senne <joshuaa.senne@gmail.co... Wednesday, June 21, 2023 at 10:36 AM

To: Drsdember@aol.com

Hello Dr. Dember,

My name is Joshua Senne, and I am currently working on a dissertation for my Ph.D. at Liberty University. The topic of my dissertation is determining the relationship between the degree of use of Social Networking Sites (SNS) and Optimism/Pessimism scores on the OPI. As such, I am requesting your permission to use the OPI as referenced below:

1. Dember, W.N., Martin, S.H., Hummer, M.K., Howe, S.R. & Melton, R.S. (1989). The measurement of optimism and pessimism. *Current Psychological Research and Reviews, 8,* 109-119.
2. https://www.healthscotland.scot/media/2241/appendix-e-scales-o-r-review-of-scales-of-positive-mental-health.pdf

If there is any additional information you would like me to provide, I would be more than happy to do so.

Regards,

Joshua Senne

[redacted]

Appendix C: Informed Consent Form

Title of the Project: How Do Social Networking Sites (SNS) Alter User Attitudes Based on the Degree of Use in the United States?

Principal Investigator: Joshua Senne

Invitation to be Part of the Research Study

You are invited to participate in a research study. **To participate, you must be 18 years of age or older, currently reside within the United States, and have experience using SNS platforms for at least 1 year or more**. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of this study is to address a gap in the literature where cultivation theory has been applied to determine the relationship between the degree of social networking site (SNS) use and measures of psychological constructs such as optimism and pessimism in users.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following:

1. Complete an online **survey that will take approximately 11 minutes to complete**. Participants will be given 20 minutes to complete the survey.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this survey.

Benefits to society include a better understanding of how the degree of SNS use may impact levels of optimism and pessimism in users, which may inform future decisions by researchers, policymakers, and SNS platform developers.

What risks might you experience from being in this study?

The expected risks from participating in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses to the online survey will be anonymous.
- Data will be stored on a password-locked computer. After three years, all electronic records will be deleted.

How will you be compensated for being a part of this study?

Participants will be compensated for participating in this study. At the conclusion of the survey, participants will receive $1 via the MTurk platform once the survey has been verified, which may take up to 2 weeks. No personal information will be obtained to verify the participation of any participants, and all participants will remain completely anonymous. Participation will be verified by checking the random I.D. that was provided to the participant at the end of the survey and entered into MTurk.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time prior to submitting the survey without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Joshua Senne. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at [redacted] You may also contact the researcher's faculty sponsor, Dr. Robert Mott, at [redacted]

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher[s], **you are encouraged** to contact the IRB. Our physical address is Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA, 24515; our phone number is 434-592-5530, and our email address is irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of this document for your records. If you have any questions about the study later, you can contact the researcher using the information provided above.

Survey Instructions

Select the link below to complete the survey. At the end of the survey, you will receive a code to paste into the box below to receive credit for taking our survey.

***Make sure to leave this window open as you complete the survey*.** When you are finished, you will return to this page to paste the code into the box.

Appendix D: IRB Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

September 20, 2023

Joshua Senne
Robert Mott

Re: IRB Exemption - IRB-FY23-24-350 How Do Social Networking Sites (SNS) Alter User Attitudes Based On The Degree Of Use In The United States?

Dear Joshua Senne, Robert Mott,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects;

For a PDF of your exemption letter, click on your study number in the My Studies card on your Cayuse dashboard. Next, click the Submissions bar beside the Study Details bar on the Study details page. Finally, click Initial under Submission Type and choose the Letters tab toward the bottom of the Submission Details page. Your information sheet and final versions of your study documents can also be found on the same page under the Attachments tab.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,
G. Michele Baker, PhD, CIP
Administrative Chair
Research Ethics Office