Fear of Missing Out (on myself?)

An empirical study of Narcissism in relation to Problematic Facebook Use

[redacted]

This thesis is submitted in partial fulfilment of the Honours degree of

Bachelor of Psychological Science (Honours)

School of Psychology

Faculty of Health and Medical Sciences

University of Adelaide

October 2018

Word Count: 9,000

Table of Contents

List of Tables v

Abstract vi

Declaration vii

Acknowledgements viii

1.0 CHAPTER 1 – Introduction 1

1.1 Defining Problematic Facebook Use 3

1.2 Problematic Facebook Use and Online Social Behaviour 4

1.3 Social Comparison Orientation and Narcissism 5

1.4 Predictors of Problematic Facebook Use 6

1.4.1 Grandiose and Vulnerable Narcissism 6

1.4.2 Personality Traits 8

1.4.3 Fear of Missing Out 9

1.4.4 Mood Symptoms 10

1.5 Positioning Narcissism in Models of Problematic Facebook Use 11

1.6 The Current Study 12

1.7 Aims and Hypotheses of the Current Study 12

2.0 CHAPTER 2 – Method 14

2.1 Participants 14

2.2 Materials 14

2.2.1 Demographic Information 15

2.2.2 Facebook Use and Intensity 15

2.2.3 Facebook Activity 15

2.2.4 Problematic Facebook Use 16

2.2.5 Fear of Missing Out 16
2.2.6 Mood Symptoms 17
2.2.7 Personality 17
2.2.8 Narcissism 18
2.3 Procedure 18
3.0 CHAPTER 3 – Results 20
3.1 Data Screening and Quality Control 20
3.2 Power Analysis 20
3.3 Aim 1: Exploring Gender Differences in Problematic Facebook Use and Online Behaviour 22
3.4 Aim 2: Examining The Strength of the Relationship Between Personality Predictors and Problematic Facebook Use 24
3.5 Aim 3: Determining The Extent To Which Narcissism Is Predictive of Problematic Facebook Use 27
4.0 CHAPTER 4 – Discussion 31
4.1 Overview 31
4.2 Summary of Findings 31
4.3 Limitations and Methodological Considerations 34
4.4 Significance and Implications for Future Research 36
4.5 Conclusion 37
References 39
Appendices 42
Appendix A – Explanatory Statement 47
Appendix B – Consent Form 48

Appendix C – Collection of Demographic Data 49

Appendix D – Survey 51

Appendix E – Summary Statement 60

Appendix F – Recruitment Material 62

Appendix G – Modifications to the Fear of Missing Out Scale 63

Appendix H – Reliability Analysis 64

Appendix I – Boxplots 65

Appendix J – Histograms 66

Appendix K – Scatterplots 71

Appendix L – SPSS Data for Examiner 72

List of Tables

Table 1. *Descriptive Statistics of the Current Sample (N = 476)*……..…….... 21

Table 2. *Descriptive Statistics of the Personality Predictor Scores in the Current Sample (N = 476)*……..…… 22

Table 3. S*pearman's Correlation Matrix of Personality Predictor Variables* i*n the Current Sample*……..…… 26

Table 4. *Hierarchical Multiple Regression Analysis for Variables Predicting PFU in the Current Sample*……..…… 29

Abstract

Online social networking sites have grown in popularity and have changed the ways in which people communicate. Among these sites, Facebook remains the undisputed leader. However, research indicates it may be excessively used by some vulnerable users. The concept of Problematic Facebook Use (PFU) refers to a pattern of online behaviour that interferes with multiple domains in one's life, such as work, study, and relationships. The aim of the present study was to investigate whether certain personality factors, specifically the two subtypes of narcissism (grandiose and vulnerable) may be positively related to PFU. In addition, cognitive and social constructs such as the Big Five personality traits, Fear of Missing Out (FoMo) and mood symptoms were examined. A convenience sample of 476 participants aged between 18 and 57 years (M = 23.60, SD = 7.04) were recruited from the University of Adelaide first-year psychology pool and through Facebook advertising. Participants completed an online questionnaire that measured PFU and various personality variables. Quantitative analysis involved an independent samples *t*-test, Spearman's correlations, and a hierarchical multiple regression. Results produced two main findings. First, females reported significantly higher PFU and more frequent online social behaviour than males. Second, contrary to predictions, FoMo was a stronger predictor of PFU than narcissism variables. The results of the present study contribute to current understandings of the association between personality factors and PFU, highlighting that narcissism and FoMo may be useful explanatory concepts for persistent social media use and relevant mechanisms to target in interventions to prevent or reduce PFU.

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any University, and, to the best of my knowledge, this thesis contains no material previously published except where due reference is made. I give permission for the digital version of this thesis to be made available on the web, via the University of Adelaide's digital thesis repository, the Library Search and through web search engines, unless permission has been granted by the School to restrict access for a period of time.

Signature:

October, 2018

Acknowledgements

First and foremost, I would like to sincerely thank my supervisor, Dr Daniel King. Your encouragement, constructive feedback, and humour is deserving of a Crown! Thank you for creating a study environment in which I felt calm and supported throughout my Honours year. I am very fortunate to have worked under your guidance and I am grateful for all of your time this year.

I would like to extend my utmost appreciation to our Head of School, Professor Anna Chur-Hansen, and to our Course Coordinator, Dr Carolyn Semmler. To Anna, thank you for your mentorship and for being an invaluable source of support for me this year, and every year. To Carolyn, thank you for your willingness to help with any question and for your unwavering professional and personal guidance. To the University of Adelaide and the research participants in my survey who willingly shared their time – thank you.

A very special thanks to my family, who have provided me with infinite love, inspiration, and support throughout the duration of my studies. For that, and so much more, you have my deepest gratitude. Thank you to my wonderful friends and to Kanye, for being an endless source of inspiration.

Last, but certainly not least, I would like to thank the 2018 Psychology Honours Cohort. This year exceeded all of my expectations because of you all, and I will cherish the memories we made together. I am so thankful for the friendships I have made and I wish you all the very best for your future.

CHAPTER 1

Introduction

With over 1.32 billion users daily, Facebook is the most popular social networking site (SNS) on the Internet (Marino, Gini, Vieno, & Spada, 2018). Of the various forms of SNSs, standard examples include communication functions (i.e., Twitter), photo-sharing functions (i.e., Instagram), career networking functions (i.e., LinkedIn) and romantic networking functions (i.e., Tinder) (Puntschart, Tochtermann, & Dösinger, 2006). These systems are employed by individuals who have an intent to communicate, connect and share their lives with others (Willems & Bateman, 2011). Facebook is distinct from other SNSs because it offers an all-encompassing functionality whereby users can receive all of these specific functions on the one platform (Burke & Ruppel, 2014). Greenwood and colleagues (2016), for example, reported that Facebook continues to be the most predominant SNS used in Western countries, with 79% of the population using Facebook. This usage is remarkably large compared to Instagram users (32%) Twitter users (24%) and LinkedIn users (29%).

A distinctive feature of Facebook is that it facilitates relationships that were formed as initial face-to-face interactions and allows users to maintain these relationships solely online (Shaw, Timpano, Tran, & Joormann, 2015). Maintaining relationships online can be an important social sphere that is particularly attractive to individuals with social anxiety and those who lack social interaction and social companionship offline (Ferrara & Yang, 2015). This convenience and versatility of use has led to an increase in popularity and global usage (Smith-Duff, 2012). By providing a platform that can be used for self-expression and impression management, Facebook has created a social phenomenon that has engrossed young people and adults all over the world. This however, has now led to an online environment where individuals have the perfect setting to create the perfect identity.

Many branches of psychology are concerned with observing and understanding social connections. While psychologists recognise the potential of Facebook to connect many people together, less is known about the intersection of social media and various kinds of psychopathology, including personality issues. A personality concept that may help to explain problematic online behaviour is narcissism, which refers to an individual trait characterised by an excessive admiration of oneself (Ozimek, Bierhoff, & Hanke, 2018). A key feature of Facebook is that it provides users the platform to communicate asynchronously, through their profiles, photos, comments and messages. This, however, provides users the opportunity to selectively convey specific or desirable information about themselves to others (Burke & Ruppel, 2014). This can lead to certain individuals developing a reliance on using Facebook as a method to gain self-admiration and validation (Shaw et al., 2015).

Correspondingly, the results of studies by Ozimek et al. (2018) and Andreassen et al. (2017) indicate that individuals with high levels of narcissism engage in frequent use of Facebook. According to these researchers, this trend is attributable to the fact that Facebook encourages users to engage in self-expressive and superficial behaviours such as posting 'selfies' (defined as a self-portrait taken with a hand-held smart phone or camera) (March & McBean, 2018), and posting multiple status updates (Ryan & Xenos, 2011). This has led researchers to recognise that individuals develop socially desirable identities online, often referred to as *"Facebook Selves"* to achieve such positive outcomes (Shaw et al., 2015). While it has been found that people communicate positive life events more frequently than negative events, these are often not an accurate representation of an individuals life offline and in the "real world" (Pantic, 2014). Consequently, the positive and exaggerated content that individuals view from their Facebook newsfeeds can have a damaging impact on one's attitude, emotions and perceptions of self (Steers et al., 2016).

Given the unsettled existing Facebook literature and the differences in experiences individuals have online, investigations of the relationship between Facebook and personality have yielded mixed results. The current study aims to expand on previous studies and address existing gaps in the research by investigating how narcissism, in combination with additional personality traits, can increase our understandings of the risk factors for developing problematic social media behaviour. In the following, we will discuss the nature of Problematic Facebook Use and explore its application in understanding online behaviour and the impact of personality variables.

1.1 Defining Problematic Facebook Use

Problematic Facebook Use (henceforth PFU) refers to a type of problematic online behaviour that interferes with different domain's in one's life such as work, study and relationships (Marino et al., 2018). Researchers in this field indicate that Facebook use may become "problematic" when it causes distress such as poor wellbeing (Oldmeadow, Quinn, & Kowert, 2013), cognitive difficulties (Eşkisu, Hoşoğlu, & Rasmussen, 2017), and decreased self-esteem and self-image (Perrone, 2016). Although PFU is an emerging area of study, evidence has suggested that the misuse or overuse of Facebook and other Internet activities could, in some extreme cases, be considered a form of addiction (Marino et al., 2018). Despite PFU falling under the category of 'cyber-relational addiction' for Internet Addiction, there is still a lack of consensus over determining a widely accepted set of diagnostic criteria for assigning Internet Addiction as a mental disorder (Poli, 2017). It is therefore recognised that further investigation is required in order to identify how differences in online behaviour may be indicative of the personality characteristics that relate to the risk of becoming problematically involved with or addicted to Facebook.

1.2 Problematic Facebook Use and Online Social Behaviour

It is well documented that online behaviours, including Facebook use, can affect mental health and psychological wellbeing (Stead & Bibby, 2017). However, the type of usage (i.e., how the online application is actually used) greatly influences the psychological outcome. Prior research indicates that Facebook behaviour can be dichotomised into active (interactive) and passive (non-interactive) forms of usage (Verduyn et al., 2015). Active use refers to activities that involve direct exchanges with others (e.g., commenting on posts, posting photos), whilst passive use involves consuming information without direct exchanges (e.g., scrolling through the newsfeed, viewing posts) (Verduyn et al., 2015). This distinction is important because cross-sectional work has linked active use with improved subjective wellbeing and feelings of social connectedness (Indian & Grieve, 2014), and passive use with reduced levels of wellbeing and feelings of envy (Frost & Rickwood, 2017).

Differences in online behaviour have been found to derive from differences in personal motivations for engaging in online interactions (Stead & Bibby, 2017). These motivations predominantly involve social gratification (Beyens, Frison, & Eggermont, 2016), social fulfilment (Stead & Bibby, 2017), the need to belong (Wegmann, Oberst, Stodt, & Brand, 2017), and the need for social status (Perrone, 2016). In addition, although both males and females use Facebook, research has shown distinctions in their online behaviour (Verduyn et al., 2015). A study conducted on Facebook use and gender by Frost and Rickwood (2017) found that females primarily used passive forms of Facebook usage, such as scrolling through the newsfeed for entertainment and passing time. Males, on the other hand, were found to primarily use active forms of Facebook usage, such as commenting on friends' content as a means of developing new relationships and increasing social connectivity. These findings suggest that variations in an individual's motivation for using

Facebook may determine the content they interact with on their newsfeeds. To explore this further, an important factor in understanding PFU and narcissism is investigating how mechanisms such as social comparisons can influence behaviour.

1.3 Social Comparison Orientation and Narcissism

One mechanism that highlights the way in which Facebook influences behaviour is a well-established psychological theory known as social comparison orientation (i.e., the need to compare oneself with others) (Festinger, 1954). Accordingly, there are multiple studies that have shown positive correlations between Facebook use and social comparison orientation (Ozimek et al., 2018). An example by which individuals can be affected from their Facebook newsfeed is through engaging in upward social comparisons (i.e. comparing oneself to another who appears "better-off") (Festinger, 1954). While there are benefits to engaging in upward social comparisons, such as being motivated to strive for greater success, individuals are more likely to feel inadequate and have poorer self-evaluations (Vogel, Rose, Roberts, & Eckles, 2014). For example, Lee (2014) found that the amount of social comparisons made on Facebook were positively associated with more negative feelings caused by those comparisons, concluding that people tend to feel bad when comparing themselves to others on Facebook. This demonstrates that frequent exposure to highly curated and unrealistic portrayals on Facebook may consciously or unconsciously give individuals the impression that others are living happier lives than them (Primack et al., 2017).

Engaging in social comparisons fulfills a number of functions, such as affiliation needs (Vogel et al., 2014), and regulating emotions (Lin & Utz, 2015). Correspondingly, evidence suggests that social comparisons are an important means in narcissistic self-regulation (Ozimek et al., 2018). Bogart and colleagues (2010) found that individuals who

scored high in narcissism had increased scores on social comparison orientation and primarily used downward comparisons (i.e. comparing oneself to another who appears 'less fortunate') (Festinger, 1954). In addition, Ozimek and colleagues (2018) found that social comparison orientation operated as a mediator between narcissism and Facebook use. The results of these two studies suggest that engaging in PFU may be especially salient to narcissists, who might be more likely than non-narcissists to process social information in terms of its relevance to the self (Bogart, Benotsch, & Pavlovic, 2004).

1.4 Predictors of Problematic Facebook Use

While the aforementioned literature highlighted how differences in Facebook usage and mechanisms of online social behaviour contribute towards understanding PFU, it is unknown as to what specific personality traits may contribute to predicting PFU among young people and adults (Marino et al., 2018). As PFU is a complex behaviour that appears to be the product of multiple factors, the current study aims to address this limitation by investigating how online experiences can be predicted by narcissism. In addition, the influences of the Big Five personality traits, Fear of Missing Out and mood symptoms will also be explored.

1.4.1 Grandiose and Vulnerable Narcissism

Narcissism, in its subclinical conceptualisation as a personality trait, is characterised by four main factors: (1) a grandiose self-view, (2) a pronounced self-focus, (3) strong feelings of entitlement, and (4) a need for social admiration but a lack of concern for others (große Deters, Mehl, & Eid, 2014). Narcissism derives the use of self-regulation strategies to represent an individual's desire to maintain and affirm an inflated sense of self, based on their need for validation and attention (große Deters et al., 2014). An important innovation in narcissism theory has been the recognition of narcissism as a dual-construct. Wink (1991)

identified that narcissism consists of two different subtypes: grandiose and vulnerable. Grandiose narcissism is characterised by overt grandiosity, feelings of entitlement, attention seeking and exhibitionism. Conversely, vulnerable narcissism refers to a more covert form of narcissism, characterised by hypersensitivity, low self-esteem and extreme fragility (Ozimek et al., 2018). According to March and McBean (2018) both subtypes differ in their self-regulation strategies. Grandiose narcissists tend to use overt strategies, such as charm and self-promotion, which are effective in regulating their self-esteem (Andreassen, Pallesen, & Griffiths, 2017). Conversely, vulnerable narcissists have an overwhelming desire for attention and recognition as a coping mechanism for deep-seated fears of inadequacy, therefore they require constant social feedback to regulate their self-esteem (Skues, Williams, & Wise, 2012). While there is a notable difference between grandiose and vulnerable narcissism, both subtypes share the core features of conceit and self-indulgence (Andreassen et al., 2017). This has led to a recent finding that both subtypes of narcissism are positively related to Facebook use (Ozimek et al., 2018).

In a study exploring the relationship between narcissism and time expenditure, Ozimek and colleagues (2018) found that vulnerable narcissists appear to use Facebook as a means to attain narcissistic goals (e.g., downward social comparisons), whereas grandiose narcissists appear to utilise different strategies in order to attain self-regulatory goals. Current research on narcissistic pathology has found that higher levels of narcissism predicted more time spent on Facebook (Skues et al., 2012), more desirable information posted about the self (Ozimek et al., 2018), and higher frequency of posted updates on Facebook (große Deters et al., 2014). Narcissistic pathology, as explored by Davenport and colleagues (2014), found that attachment anxiety mediated the relationship between vulnerable narcissism and SNS addiction. Accordingly, vulnerable narcissistic individuals have been observed to use Facebook to gain admiration and validation from others (Singh, Farley, & Donahue, 2018).

These findings suggest that due to the differences in self-regulation strategies, vulnerable narcissism is more likely to be predictive of PFU than grandiose narcissism. However, it has been recently recognised in the literature that both subtypes of narcissism are strongly related to online self-presentation and promotion (March & McBean, 2018). In terms of the relationship between sociodemographic factors and narcissism, it has been found that females tend to display greater vulnerable narcissism and addictive behaviours than males online (Andreassen et al., 2017). However, as this area of research is still new and evolving, it requires further exploration. As Facebook can be used as a gratifying medium for individuals with elevated narcissistic traits, it is expected that both grandiose and vulnerable narcissism will contribute to predicting PFU.

1.4.2 Personality Traits

The Five Factor Model, otherwise known as the Big Five (Costa & McCrae, 1992), has arguably been the most commonly used model for examining broad models of personality (Jenkins-Guarnieri, Wright, & Hudiburgh, 2012). The Big Five is based on individual personality differences across five dimensions: Openness (which refers to openness to new experiences and exploring one's imagination), Conscientiousness (which refers to orderliness and precision), Extraversion (which refers to expansiveness and sociability), Agreeableness (which refers to friendliness and politeness) and Neuroticism (which refers to the capacity to cope with emotionality and anxiousness) (Jenkins-Guarnieri et al., 2012).

Researchers have found that personality traits can predict the intensity and nature of online interpersonal communication (Jenkins-Guarnieri et al., 2012). For instance, research by Marino and colleagues (2016) found that extraversion was a significant predictor of PFU, with extraverts being more likely to engage in strategic self-presentation strategies as an attempt to present the same traits that others witness in person. Similar findings have been

found with openness, with Seidman (2013) reporting those high in openness were likely to engage in PFU by developing a dependence on supplementing real-life interactions by using Facebook as a communication platform. While agreeableness and conscientiousness appear to be linked to sociability on Facebook, both of these traits have been associated with consistent and authentic portrayals online (Seidman, 2013), and thus are unrelated to negative online use (Skues et al., 2012). As neuroticism is correlated with social anxiety and public self-consciousness (Seidman, 2013), research has found that those high in neuroticism develop a reliance on Facebook for self-expression but are inconsistent with expressing their true selves online (Skues et al., 2012). Despite these findings, there is a recent consensus that broad approaches to personality such as the Big Five may not be the best predictors of online behaviour (Skues et al., 2012). Instead, investigating specific individual constructs may be more likely to yield better-quality results in determining the strongest predictors of PFU.

1.4.3 Fear of Missing Out

As social animals, humans have a desire to belong to social groups, both in the physical and virtual sphere (Abel et al., 2016). This desire underlies the importance of needing to seek and maintain social connections, which are essential for human survival (Beyens et al., 2016). Without these connections, individuals may fear social isolation. Fear of Missing Out, often abbreviated as FoMo, can be defined by the pervasive apprehension that others might be having rewarding experiences from which one is absent (Przybylski, Murayama, DeHaan, & Gladwell, 2013). Although FoMo has been known to be a popular layman's concept, the term has since been defined and operationalised in the psychological literature (Przybylski et al., 2013). The concept of FoMo derives key characteristics from Self-Determination Theory (SDT), a theory of motivation often used in workplace management (Deci, Olafsen, & Ryan, 2017). SDT suggests that healthy wellbeing stems from

the fulfillment of three basic psychological needs – competence, belongingness and autonomy. These needs are essential for psychological health and effective functioning in social settings (Deci et al., 2017). Przybylski et al. (2013) infers that deficits in psychological needs may increase sensitivity to developing a fear of missing out. Thus, it is expected that individuals may develop a dependence on Facebook as a self-regulation tool to satisfy these psychological needs (Przybylski et al., 2013). Researchers have found that FoMo is predictive of increased Facebook engagement and lowered wellbeing (Perrone, 2016). Further evidence indicates that FoMo has been positively associated with envy and loneliness (Hetz, Dawson, & Cullen, 2015), as well as increased stress related to Facebook use (Stead & Bibby, 2017). Interestingly, the self-regulation strategies used for individuals with high levels of FoMo appear to be similar in structure to the self-regulation strategies used for individuals with high levels of vulnerable narcissism. Therefore, it is expected we will find similar results between FoMo and narcissism in their predictive ability to understand PFU. As the concept of FoMo is relatively new, it requires further exploration in order to be demonstrated as a personality characteristic that can explain PFU (Elhai, Levine, Dvorak, & Hall, 2016).

1.4.4 Mood Symptoms

As anxiety and depression demonstrate high comorbidity (Banjanin, Banjanin, Dimitrijevic, & Pantic, 2015), there is robust evidence supporting the relationship between Facebook use and increased mood symptoms. In 2011, the American Academy of Pediatrics proposed the term *"Facebook Depression",* a theory that has since attracted attention and has been widely reported in the media (Chow & Wan, 2017). This term has been used to describe the bi-directional relationship in which young people are being absorbed by SNSs, the impact of which has elicited symptoms of depression (Simoncic, Kuhlman, Vargas, Houchins, & Lopez-Duran, 2014). Interestingly, there are significant sex differences in social networking

behaviour, with females reporting higher rates and more chronic cases of depression and anxiety than their male counterparts (Simoncic et al., 2014). This may be due to the majority of Facebook users being female (60%) and therefore being more likely to spend frequent time on their profiles (Simoncic et al., 2014). As Facebook's activities vary in the degree of mood symptoms experienced (McCord et al., 2014), evidence for factors that contribute to the heterogeneity of findings have not yet been identified (Simoncic et al., 2014). New research must therefore seek to understand the role of mood symptoms in predicting PFU.

1.5 Positioning Narcissism in Models of Problematic Facebook Use

Current findings in social media research have suggested that SNSs may serve as ideal social environments for individuals who are attracted to ego-enhancing activities (Andreassen et al., 2017). This is because SNSs enable individuals to regulate their self-esteem on the basis of instant feedback from a potentially large number of people (Ryan & Xenos, 2011). As Ryan and Xenos (2011) point out, the prevalence of narcissistic individuals on Facebook may lead to a rise in narcissistic behaviour online, as such behaviour may begin to be viewed as acceptable. It could therefore be speculated that individuals with elevated narcissistic traits are at a higher risk of developing PFU because Facebook serves the needs of individuals with narcissistic tendencies. As there have been mixed findings regarding the role of the personality variables in relation to PFU, there is scope for further investigation in this field. Investigating specific individual constructs such as grandiose and vulnerable narcissism can offer valuable insight into understanding the addictive mechanisms of Facebook that are linked to self-admiration and problematic online behaviour.

1.6 The Current Study

The current study aims to investigate the importance of narcissism as a personal characteristic of individuals with PFU. While current models of behavioural addiction have emphasised motivations to use Facebook that include the desire to connect with others and distress when social gratification needs are not being met, this study will examine the possibility that some individuals may be more concerned with self-related activities, rather than activities that serve social functions such as communicating with others. Accordingly, the tendency to misuse or overuse Facebook may be explained, to some degree, by narcissistic tendencies. Given the research literature on cognitive and social constructs such as the Big Five personality traits, Fear of Missing Out, and mood symptoms as contributors to PFU, it was considered important to also include these variables in our investigation. As PFU is a relatively new concept, findings from this study prompt for further research and development in this area. Furthermore, the benefits of these findings are expected to provide a conceptual understanding and identification of the personality characteristics that may act as risk factors for intervention-related benefits to prevent or reduce PFU. By focusing on the two different subtypes of narcissism and including a wide range of covariates in this study, there is an opportunity for greater clarity in the research.

1.7 Aims and Hypotheses of the Current Study

The current study had three main aims. The first aim was to examine whether gender differences may influence the relationship between PFU and online social behaviour. The aforementioned literature suggested males and females use Facebook in differing ways (Simoncic et al., 2014), which provided theoretical motivation to explore whether these differences may contribute as risk factors for developing PFU. The second aim of this study

was to examine the correlation between the two subtypes of narcissism and PFU in comparison to other personality predictors, as recent research highlighted the Big Five personality traits may not be the best predictors of online behaviour (Skues et al., 2012). This provided theoretical motivation to explore a more recent concept to social media research by investigating narcissism. Correspondingly, the third aim of this study was to determine the extent to which grandiose and vulnerable narcissism were predictive variables of PFU, with several other personality predictors being considered. Based on these aims, the following hypotheses were proposed.

Hypothesis 1: Females will have significantly higher scores in PFU and increased online social behaviour (i.e., Facebook intensity and Facebook activity) than males.

Hypothesis 2: Grandiose and vulnerable narcissism will have a stronger correlation with PFU than the Big Five personality traits (i.e., openness, conscientiousness, extraversion, agreeableness and neuroticism).

Hypothesis 3: Grandiose and vulnerable narcissism will be significant predictors of PFU after controlling for gender, online social behaviour, mood symptoms, and FoMo.

CHAPTER 2

Method

2.1 Participants

The study recruited a convenience sample of 476 participants, including 353 women (74%) and 123 men (26%). Participants were aged between 18 and 57 years (M = 23.60, SD = 7.04). Participants were recruited from the *University of Adelaide* (UoA) first-year psychology pool (N = 219) and through Facebook advertising (N = 257). First-year psychology students accessed the survey via the UoA *Research Participation System* and Facebook users accessed the survey via University groups (i.e., *University of Adelaide Psychology Students* and *University Survey Exchange*). As an incentive to completing the survey, first-year students received course credit and Facebook users were eligible to enter a draw to win a $25.00 gift voucher. Eligible participation required regular Facebook users (i.e., using the site once a week), a minimum age of 18 years and proficiency in English.

2.2 Materials

Participants accessed the survey hosted on the online survey software *SurveyMonkey* where a survey battery composed of eight standard measures was constructed for data collection (see Appendices C to D). A pilot study was conducted on a small sample of ten participants to determine the appropriate time taken to complete the survey as well as any readability or technical issues. This process led to some minor formatting adjustments but no other issues were identified. All ten participants understood all sections of the survey and completion required approximately 15 minutes.

2.2.1 Demographic Information

Standard demographic information was obtained from all participants, including their age, gender, highest level of education completed, current employment status, sexual orientation, current relationship status, and ethnicity.

2.2.2 Facebook Use and Intensity

Frequency and emotional connectedness towards Facebook were measured using the 8-item *Facebook Intensity Scale* (FBI) (Ellison, Steinfield, & Lampe, 2007). This measure captures the extent to which an individual is emotionally and actively engaged with using Facebook. Respondents indicated the extent to which they agreed with eight statements about Facebook use on a 5-point Likert-scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Items included examples such as, *"I would be sad if Facebook shut down"*. Higher scores indicated stronger emotional attachment and intensity with Facebook use. This measure has previously demonstrated good reliability and high internal consistency (Cronbach's $\alpha = 0.83$) (Pettijohn, LaPiene, & Horting, 2012).

2.2.3 Facebook Activity

Facebook activity was measured using the 28-item *Facebook Use Questionnaire* (FBQ) (Ross et al., 2009). This measure captures the frequency of using socially interactive features of Facebook. Included in this list of basic functions were: checking one's own profile or checking to see what someone is up to; scrolling through the newsfeed; liking or commenting on memes (humorous content for which members can discuss the topic of interest); status updates (which allow a Facebook user to indicate what they are doing in the present moment); sharing links (public content); posting, liking or commenting on photos (whereby a Facebook user can comment on their friends' posted material); sending private

messages; and participating in events (which, on Facebook, serve as indications of real world events). Respondents indicated the frequency to which they engaged with these activities on a 5-point Likert-scale from 1 (*Never*) to 5 (*Very Regularly*). Higher scores indicated increased engagement with Facebook activities. The FBQ is considered a worldwide, highly cited survey tool with high internal consistency (Cronbach's $\alpha = 0.80$) (Ross et al., 2009).

2.2.4 Problematic Facebook Use

PFU was adapted using the 9-item *Social Media Disorder Scale* (SMDS), a short version of the 27-item scale (van den Eijnden, Lemmens, & Valkenburg, 2016). According to the nine diagnostic criteria for Internet Gaming Disorder (IGD), which is the first Internet-related disorder to be included in the Diagnostic and Statistical Manual of Mental Disorders, an individual is diagnosed with IGD if they answer *'yes'* to five (or more) of the nine criterions relating to Preoccupation, Tolerance, Withdrawal, Displacement, Escape, Problems, Deception, Displacement and Conflict during a period of 12 months. As recent research has highlighted the need to develop a specific theory-driven measure to assess problematic social media use, it was reasoned that the nine diagnostic criteria for IGD could be used to define PFU. Items included examples such as, *"During the past year have you regularly had arguments with others because of your social media use?"* A score of five or more indicated PFU. The 9-item SMDS demonstrates high internal consistency (Cronbach's $\alpha = 0.90$) and good criterion validity (van den Eijnden et al., 2016).

2.2.5 Fear of Missing Out

The *Fear of Missing Out* (FoMo) scale, developed by Przybylski et al. (2013) is a 10-item scale that measures apprehension from missing out on experiencing friends and others rewarding experiences. Respondents indicated the extent to which they agreed with eight statements about FoMo on a 5-point Likert-scale from 1 (*Not at all true of me*) to 5

(*Extremely true of me*). Items included examples such as, *"I fear my friends have more rewarding experiences than me".* Przybylski et al. (2013) reported high internal consistency (Cronbach's $\alpha = 0.90$) with total scores correlating positively with social media engagement. The scale was modified to include a second FoMo scale that measured how Facebook use was related to missing out on the self (i.e., displaying narcissistic tendencies). Presented in the same format as the original scale, questions were adjusted to include examples such as, *"I fear others miss my Facebook content when I haven't posted in a while"* (see Appendix G for modifications). For both measures, higher scores indicated higher levels of FoMo.

2.2.6 Mood Symptoms

Depression and anxiety were measured via the 21-item *Depression Anxiety Stress Scale* (DASS21), a short version of the 42-item scale (Lovibond & Lovibond, 1995). The DASS21 comprises three 7-item scales that assess anxiety, depression and stress symptomatology in individuals. Respondents indicated the extent to which the statements applied to them during the last 7 days on a 4-point Likert-scale from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much or most of the time*). Items included examples such as, *"I found it hard to wind down"*. Higher scores indicated severity in mood symptoms. The DASS21 is a widely used screening assessment that demonstrates high internal consistency for depression (Cronbach's $\alpha = 0.97$) and anxiety (Cronbach's $\alpha = 0.87$) with convergent validity against other depression and anxiety measures (Elhai et al., 2016).

2.2.7 Personality

Personality traits were measured using the *Ten Item Personality Inventory* (TIPI), a 10-item measure of the Big Five personality traits (Gosling, Rentfrow, & Swann, 2003). This measure asked participants to indicate the extent to which they agreed with ten statements referring to the five domains of Openness, Conscientiousness, Extraversion, Agreeableness

and Neuroticism. Respondents answered on a 7-point Likert-scale from 1 (*Disagree Strongly*) to 7 (*Agree Strongly*). Items included examples such as *"I see myself as extraverted, enthusiastic"* and *"I see myself as reserved, quiet"*. The TIPI demonstrates good construct validity and test-retest reliability (0.71) but sacrifices some internal consistency when measuring the Big Five personality traits, as the TIPI only uses two items for measuring each personality dimension (Cronbach's $\alpha = 0.40\text{-}0.73$).

2.2.8 Narcissism

The *Pathological Narcissism Inventory* (PNI) developed by Pincus et al. (2013) was used to measure grandiose and vulnerable themes of narcissistic pathology. The PNI is a 52-item scale assessing seven dimensions of pathological narcissism including Narcissistic Grandiosity (Entitlement Rage, Exploitativeness, Grandiose Fantasy, Self-sacrificing Self-enhancement) and Narcissistic Vulnerability (Contingent Self-esteem, Hiding the Self, Devaluing). Respondents indicated the extent to which they agreed with eight statements about Facebook use on a 6-point Likert-scale from 1 *(Not at all like me*) to 6 (*Very much like me*). Items included examples such as, *"I often fantasise about being admired and respected"*. Higher scores indicated greater narcissism. The PNI demonstrates good convergent and discriminate validity of grandiose and vulnerable conceptualisations of pathological narcissism, and high internal consistency (Cronbach's $\alpha = 0.93$) (Pincus et al., 2009).

2.3 Procedure

The current study was approved by the *University of Adelaide Human Research Ethics Subcommittee* (Approval Number: *18/62*). All participants received a brief description of the study before choosing to partake in the survey (see Appendix F). This information was

available on the *Research Participation System* for first-year psychology students and on the University Facebook groups. Participants accessed a web URL on *SurveyMonkey* that contained the study to be completed. This remained available online for a duration of 12 weeks (29/05/2018 – 21/08/2018). After confirming their eligibility, participants were required to read the explanatory statement that outlined the aims, summaries and implications of the research (see Appendix A). Participants were informed that completion of the survey was voluntary, anonymous and no deception would be involved. Participants were informed that they could withdraw from the study at any time without comment or penalty.

After providing consent, participants were directed to the online survey and spent, on average, 15 minutes to complete the survey. Upon completion, participants recruited from Facebook could enter into a draw for a $25.00 gift voucher by providing their name and email address (see Appendix E). First-year students provided a special five-digit code that was used to recognise their participation and award course credit (see Appendix B). Sensitive information was not identifiable with participants' results in the study. The contact details of the researchers, ethics committee and counselling services were provided to all participants.

CHAPTER 3

Results

3.1 Data Screening and Quality Control

Data were analysed using SPSS Statistics® Version 25. Prior to analysis, data were screened for missing values, outliers, and invalid values. Frequencies and descriptive statistics were generated for each of the variables, presented in Tables 1 and 2. A total of 476 respondents participated in this study, with no missing cases or incorrect response input. Following the recommendation of requiring a Cronbach's α of 0.70 or higher as proposed by Nunnally (1978), the internal consistency reliability reported acceptable results for all psychometric measures except the TIPI (See Appendix H). However, as noted by Gosling et al. (2003), the goal of creating the TIPI was to construct a short instrument that optimised validity (including content validity). As the TIPI measures broad domains of personality with only two items per dimension at both positive and negative poles, this means it will often perform poorly in terms of Cronbach's α. Further, Cronbach's α can be misleading when calculated on scales with only a small number of items (Kline, 2000).

3.2 Power Analysis

A priori power analysis was conducted using G*Power 3.1.9.2. The results indicated the following sample sizes were required in order to achieve a power level of 0.80 when adopting a significance criterion of $\alpha = 0.05$ and measuring medium effect sizes: $N = 51$ for an independent samples *t*-test; $N = 67$ for a bivariate correlation model; and $N = 44$ with ten predictors in a hierarchical multiple regression model. Therefore, the study had sufficient statistical power for all statistical analyses that were conducted.

Table 1

Descriptive Statistics of the Current Sample (N = 476)

Variable	Characteristic	*N*	%
Gender	Male	123	25.8
	Female	353	74.2
Highest Level of Education Completed	Less than High School Degree	5	1.1
	High School Degree or equivalent	158	33.2
	TAFE Certificate/Apprenticeship	29	6.1
	University, but no degree	85	17.9
	Bachelor Degree	118	24.8
	Honours/Graduate Diploma Degree	35	7.4
	Masters/PhD Degree	46	9.7
Current Employment Status	Student	297	80
	Employed, working Full-Time	95	20
	Employed, working Part-Time	190	39.9
	Not employed	20	4.2
Ethnicity	Caucasian	382	80.3
	Indigenous/Torres Strait Islander	0	0
	Black	8	1.7
	Asian	57	12.0
	Latino/Hispanic	4	0.8
	Middle Eastern	11	2.3
	Other	14	2.9
Sexual Orientation	Heterosexual	421	88.4
	Homosexual	19	4.0
	Bisexual	29	6.1
	Other	2	0.4
	Prefer not to say	5	1.1
Current Relationship Status	Single	228	47.9
	In a relationship	199	41.8
	Engaged/Married	46	9.7
	Separated/Divorced	3	0.6
	Other	0	0

Note. N = Sample Size; % = Percentage of Sample.

Table 2

Descriptive Statistics of the Personality Predictor Scores in the Current Sample (N = 476)

Variable	Mean	*SD*	Min	Max	Cronbach's α
Problematic Facebook Use	2.25	2.28	0.00	9.00	0.77
Facebook Intensity	3.26	0.75	1.00	5.00	0.83
Facebook Activity	3.14	0.53	1.58	4.42	0.83
Fear of Missing Out (Self)	1.54	0.61	1.00	5.00	0.84
Fear of Missing Out (Others)	1.21	0.83	0.00	4.00	0.90
Stress	6.02	4.54	0.00	21.00	0.87
Anxiety	0.51	0.60	0.00	2.86	0.87
Depression	0.66	0.70	0.00	3.00	0.92
Openness	5.12	1.12	1.50	7.00	0.45
Conscientiousness	5.11	1.21	1.50	7.00	0.50
Extraversion	4.23	1.64	1.00	7.00	0.77
Agreeableness	4.94	1.04	1.50	7.00	0.40
Neuroticism	3.63	1.44	1.00	7.00	0.73
Grandiose Narcissism	2.70	0.83	0.17	5.00	0.89
Vulnerable Narcissism	2.20	0.80	0.22	4.38	0.96

Note. N = Sample Size; SD = Standard Deviation; Min = Minimum; Max = Maximum.

3.3 Aim 1: Exploring Gender Differences in Problematic Facebook Use and Online Social Behaviour

Aim 1 was to explore how gender differences may influence the relationship between PFU and online social behaviour. Hypothesis 1 predicted that females would score higher in PFU and online social behaviour (i.e., Facebook intensity and Facebook behaviour) than males. An independent-samples *t*-test was used to determine if a statistically significant difference existed between comparing the means of males (N = 123) and females (N = 353) across three dependent variables. The first dependent variable was PFU (measured with scores on the SMDS); the second was Facebook intensity (measured with scores on the FBI); and the third was Facebook activity (measured with scores on the FBQ).

All six assumptions of the statistical analysis were tested. As all dependent variables were measured at the continuous level and as the independent variable was dichotomous, the assumptions related to study design were met. A visual inspection of boxplots identified the presence of thirteen outliers in the dependent variables – PFU (eight), Facebook intensity (three), Facebook activity (two). These were transformed to the closest (non-outlier) value depending on the direction of dissent (Tabachnick & Fidell, 2007) (see Appendix I). Multivariate outliers were assessed using Mahalanobis distance, revealing one outlier measuring 16.71. As this was close to the critical value, it was retained for analysis (Tabachnick & Fidell, 2007). Further normality checking revealed no additional univariate or multivariate outliers. The Shapiro-Wilk statistic indicated the assumption of normality was violated across all dependent variables ($p < 0.05$). However Ghasemi and Zahediasl (2012) note the central limit theorem provides support for satisfying this assumption in large sample sizes ($N > 30$), as the distribution tends to be normal, regardless of the shape of the data. Furthermore, a visual inspection of histograms revealed normal distribution (see Appendix J).

Results from the first *t*-test indicated that PFU was higher in females ($M = 2.27$, $SD = 1.91$) than males ($M = 1.72$, $SD = 1.91$). This difference was statistically significant, $M = 0.55$, 95% CI [0.12, 0.98], $t(474) = 2.53$, $p = 0.01$. In addition, the assumption of homogeneity of variances was tested and satisfied using Levene's test for equality of variances ($p = 0.06$). Cohen's d was calculated at 0.27, indicating a small effect based on Cohen's (1988) guidelines. Results from the second and third *t*-test indicated the assumption of homogeneity of variances was violated ($p < 0.05$). However, a modification can be made to the standard *t*-test to accommodate unequal variances and still deliver a valid test result (Howell, 2010). The modified *t*-test that was used was the Welch *t*-test. Results from the Welch *t*-test indicated that Facebook intensity was higher in females ($M = 3.33$, $SD = 0.71$) than males ($M = 3.04$, $SD = 0.83$). This difference was statistically significant with a small

effect size, M = 0.31, 95% CI [0.12, 0.46], $t(187.06) = 3.46$, $p = 0.01$, $d = 0.38$. The final *t*-test reported similar results, finding that Facebook activity was higher in females (M = 3.22, SD = 0.48) than males (M = 2.92, SD = 0.59). This difference was statistically significant with a medium effect size, M = 0.30, 95% CI [0.18, 0.42], $t(180.77) = 5.09$, $p < .001$, d = 0.56. Together, these findings supported Hypothesis 1, predicting that females would have increased scores on PFU and online social behaviour than males.

3.4 Aim 2: Examining The Strength of the Relationship Between Personality Predictors and Problematic Facebook Use

Aim 2 was to examine the correlation between narcissism and PFU in comparison to the Big Five personality traits. Hypothesis 2 predicted that both grandiose and vulnerable narcissism would have a stronger and more positive correlation with PFU than the Big Five personality traits. In addressing this aim, a Spearman's rank-order correlation matrix was run to assess the relationship between all personality variables in the study. Findings are reported in Table 3.

Assumptions related to study design were met, as all variables were measured at the continuous level and represented paired observations. A visual inspection of scatterplots measuring the independent variables with PFU indicated the presence of both monotonic and non-monotonic relationships (See Appendix K). As monotonic relationships are not a strict assumption of Spearman's correlation (Tabachnick & Fidell, 2007), all variables were retained for analysis to determine if there were any monotonic components observed.

Results demonstrated a statistically significant, weak positive correlation between grandiose narcissism and PFU, ($r_s(95) = 0.31$, $p < .001$) and a moderate, positive correlation between vulnerable narcissism and PFU, ($r_s(95) = 0.43$, $p < .001$). The relationship between

narcissism and PFU was stronger and more positive than compared to openness (r_s (95) = -0.12, $p < .001$), conscientiousness (r_s (95) = -0.18, $p < .001$), extraversion (r_s (95) = 0.02, $p > 0.05$), agreeableness (r_s (95) = -0.18, $p < .001$), and neuroticism (r_s(95) = 0.29, $p < .001$). These findings supported Hypothesis 2, predicting that both subtypes of narcissism would have a stronger correlation with PFU than the Big Five personality traits.

Further findings revealed that vulnerable narcissism had a stronger association with PFU than grandiose narcissism (findings noted above). Contrary to predictions, narcissism had a weaker association with PFU than FoMo, as results revealed the strongest bivariate relationship with PFU was FoMo. Findings demonstrated a moderate, positive correlation between PFU and both the original FoMo variable (r_s(95) = 0.47, $p < .001$) and the modified FoMo variable (r_s(95) = 0.47, $p < .001$). In addition, vulnerable narcissism (but not grandiose narcissism) had a stronger association with PFU than stress (r_s(95) = 0.38, $p < .001$), anxiety (r_s(95) = 0.36, $p < .001$), and depression (r_s(38) = 0.29, $p < .001$).

Table 3

Spearman's Correlation Matrix of Personality Predictor Variables in the Current Sample

Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Problematic Facebook Use														
2. Facebook Intensity	0.33**													
2. Facebook Behaviour	0.28**	0.55**												
3. Fear of Missing Out (Self)	0.47**	0.44**	0.43**											
4. Fear of Missing Out (Others)	0.47**	0.35**	0.26**	0.60**										
5. Stress	0.40**	0.01*	0.14**	0.33**	0.38**									
6. Anxiety	0.36**	0.06	0.06	0.31**	0.36**	0.74**								
7. Depression	0.38**	0.03	0.05	0.26**	0.39**	0.76**	0.66**							
8. Openness	-0.12**	-0.11*	0.03	-0.03	-0.09	-0.06	-0.09	-0.13**						
9. Conscientiousness	-0.18**	-0.01	-0.06	-0.13**	-0.22**	-0.17**	-0.23**	0.27**	0.11*					
10. Extraversion	0.02	0.15**	0.24**	0.14**	0.08	-0.09	-0.10*	-0.18**	0.26**	0.05				
11. Agreeableness	-0.18**	-0.07	-0.03	-0.16**	-0.19**	-0.16**	-0.20*	-0.22**	0.20**	0.19**	-0.07			
12. Neuroticism	0.23**	0.09*	0.17**	0.22**	0.27**	0.60**	0.53**	0.58**	-0.16**	-0.21**	-0.13**	-0.23**		
13. Grandiose Narcissism	0.31**	0.20**	0.22**	0.38**	0.46**	0.33**	0.27**	0.27**	0.10*	-0.16**	0.19**	-0.15**	0.15**	
14. Vulnerable Narcissism	0.43**	0.19**	0.20**	0.40**	0.48**	0.55**	0.51**	0.55**	-0.11*	-0.26**	-0.09*	-0.18**	0.45**	0.59**

Note. Spearman's rank-order correlation coefficient values as depicted by r_s values.
***. Correlation is significant at the 0.01 level (2-tailed).*
***. Correlation is significant at the 0.05 level (2-tailed).*

3.5 Aim 3: Determining The Extent To Which Narcissism Is Predictive of Problematic Facebook Use

Aim 3 was to determine the extent to which grandiose and vulnerable narcissism was predictive of PFU, with several other predictors also being considered. As past research has reported mixed findings for the relationship between personality and PFU, additional personality predictors were tested to determine their relative contribution to the variance in PFU scores. These predictors included mood symptoms (i.e., anxiety, depression and stress), and both the original and modified FoMo variables. An additional area of interest was to determine whether vulnerable narcissism was predictive of PFU over and above FoMo when controlling for the variables listed above, as both measures appear similar in structure. The covariates of gender and online social behaviour (i.e., Facebook intensity and Facebook activity) were also included. Hypothesis 3 predicted that grandiose and vulnerable narcissism would provide significant predictive ability when controlling for the variables listed above.

A three stage hierarchical multiple regression was conducted with PFU as the dependent variable. All eight assumptions of the statistical analysis were tested. Assumptions related to study design were met, as all variables were measured at the continuous level. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.00. A visual inspection of histograms and scatterplots for all variables indicated the assumptions of normality, linearity and homoscedasticity were all satisfied (see Appendices J to K). There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1 and VIF values greater than 10. Seven univariate outliers were identified that were greater than ±3 standard deviations, however these were retained for analysis, as further testing reported no leverage values greater than 0.5 and no Cook's distance values above 1 (Tabachnick & Fidell, 2007). An examination of Mahalanobis distance scores indicated no multivariate

outliers. After satisfying the assumptions, a three stage hierarchical multiple regression was conducted with PFU as the dependent variable. Inter-correlations were previously reported in Table 3 and regression statistics are reported in Table 4.

Results from Model 1 indicated that gender, online social behaviour and mood symptoms contributed significantly to the regression model, $R^2 = 0.23$, $F(6, 469) = 22.71$, $p < .001$; adjusted $R^2 = 0.22$. This accounted for 23% of the variation in PFU. Introducing the FoMo variables in Model 2 explained an additional 6.3% of the variation in PFU and led to a statistically significant increase in R^2 of 0.29, $F(2, 467) = 20.62$, $p < .001$; adjusted $R^2 = 0.28$. Finally, the addition of grandiose and vulnerable narcissism in Model 3 explained only an additional 0.8% of the variation in PFU, which was a non-significant result, $R^2 = 0.30$, $F(2, 465) = 2.71$, $p = 0.07$; adjusted $R^2 = 0.28$. When all ten independent variables were included in stage three of the regression model, only gender, Facebook intensity and both FoMo variables were significant predictors of PFU. Together, the ten predictors accounted for 30% of the variation in PFU, indicating a small-to-medium effect size, $d = 0.44$.

Based on this outcome, Hypothesis 3 was not supported, as narcissism did not provide significant predictive ability of PFU when controlling for the aforementioned predictors. Indeed, the most significant contribution was FoMo, which uniquely explained 6% of the variation in PFU. These findings were expected, as Hypothesis 2 demonstrated that FoMo had the strongest association with PFU, and therefore it was anticipated it would be the most important predictor of PFU in the study sample.

Table 4

Hierarchical Multiple Regression Analysis for Variables Predicting PFU in the Current Sample

Predictor Variables	B	SE	β	*t*	*p*	95% CI	R^2	Adjusted R^2	ΔR^2
Step 1									
Model 1							0.23	0.22	**0.23**
Constant	-2.23	0.62		-3.58	0.00**	-3.45, -1.01			
Gender	0.18	0.22	0.04	0.84	0.40	-0.25, 0.62			
Facebook Intensity	0.77	0.15	0.25	5.19	0.00**	0.48, 1.06			
Facebook Activity	0.24	0.22	0.05	1.09	0.28	-0.19, 0.66			
Anxiety	0.29	0.26	0.08	1.10	0.27	-0.23, 0.80			
Depression	0.53	0.22	0.16	2.42	0.02*	0.10, 0.96			
Stress	0.01	0.04	0.14	1.83	0.07	-0.01, 0.14			
Step 2									
Model 2							0.29	0.28	**0.06**
Constant	-2.10	0.60		-3.49	0.00**	-3.28, 0.91			
Gender	0.50	0.22	0.10	2.28	0.02*	0.07, 0.92			
Facebook Intensity	0.43	0.15	0.14	2.81	0.00**	0.13, 0.73			
Facebook Activity	-0.00	0.21	-0.01	-0.04	0.97	-0.43, 0.41			
Anxiety	0.12	0.26	0.03	0.42	0.67	-0.39, 0.61			
Depression	0.34	0.22	0.10	1.57	0.12	-0.08, 0.76			
Stress	0.05	0.04	0.09	1.26	0.21	-0.03, 0.12			

Fear of Missing Out (Self)	0.54	0.20	0.15	2.74	0.01**	0.15, 0.92			
Fear of Missing Out (Others)	0.61	0.15	0.22	4.18	0.00**	0.32, 0.89			
Step 3									
Model 3							0.30	0.28	0.00
Constant	-2.49	0.64		-3.90	0.00**	-3.75, -1.24			
Gender	0.51	0.22	0.01	2.32	0.02*	0.08, 0.95			
Facebook Intensity	0.41	0.15	0.14	2.72	0.01**	0.11, 0.71			
Facebook Activity	-0.05	0.21	-0.01	-0.02	0.81	-0.47, 0.37			
Anxiety	0.08	0.26	0.02	0.30	0.76	-0.42, 0.58			
Depression	0.29	0.22	0.09	1.31	0.19	-0.14, 0.71			
Stress	0.03	0.04	0.06	0.84	0.40	-0.04, 0.10			
Fear of Missing Out (Self)	0.51	0.20	0.14	2.61	0.01**	0.13, 0.90			
Fear of Missing Out (Others)	0.52	0.15	0.19	3.49	0.00**	0.23, 0.82			
Grandiose Narcissism	0.07	0.15	0.03	0.50	0.62	-0.22, 0.36			
Vulnerable Narcissism	0.29	0.17	0.10	1.71	0.09	-0.04, 0.63			

Note. Bolded values reach statistical significance. B = unstandardised beta coefficients; SE = standard error of the coefficients; β = standardised beta coefficients; t = obtained t-value; p = probability; R^2 and Adjusted R^2 = proportion of variance explained; ΔR^2 = change in R^2 between equations.
***. Correlation is significant at the 0.01 level (2-tailed).*
***. Correlation is significant at the 0.05 level (2-tailed).*

CHAPTER 4

Discussion

4.1 Overview

The primary purpose of this research was to investigate whether personality factors, specifically the two subtypes of grandiose and vulnerable narcissism, would increase our understandings of the risk factors for developing PFU. Specifically, we were interested in testing if the tendency to overuse Facebook could be explained, to some degree, by narcissistic tendencies. Given the research literature on cognitive and social constructs such as the Big Five personality traits, Fear of Missing Out, and mood symptoms, these variables were also included in our study. Investigating the ways in which PFU, a relatively new construct in social media research, was related to personality characteristics provided valuable insight. First, it was found that gender differences were present, with females reporting significantly higher PFU and online social behaviour than males. Second, contrary to predictions, FoMo was a stronger predictor of PFU than narcissism variables. The results of the current study contribute to current understandings of the association between personality factors and PFU, highlighting that narcissism and FoMo may be useful explanatory concepts for persistent social media use and relevant mechanisms to target in interventions to prevent or reduce PFU.

4.2 Summary of Findings

The first aim of this study was to examine whether gender differences may influence the relationship between PFU and online social behaviour. Due to limited research that specifically examined gendered patterns of communication and behaviour on Facebook, it

was hypothesised that females would have significantly higher scores in PFU and increased online social behaviour (i.e., Facebook intensity and Facebook activity) than males. The data revealed that Hypothesis 1 was supported: females reported significantly higher PFU, Facebook intensity and Facebook activity than their male counterparts. These findings are in line with a variety of studies, which have found females report more addictive online behaviour than males (Andreassen et al., 2017), females are "heavier users" of Facebook (i.e., spend more than one hour a day on the site than males) (Morris, 2013), and females are more likely to treat Facebook as an integral part of their life (Biernatowska, 2017). While our results demonstrate consistency with previous research, there are several factors to consider with our findings. First, a gender imbalance was present in the sample: 75% of participants were female and 25% of participants were male. Second, due to time and resource constraints, the majority of the participants in this study were first-year psychology students. Although our sample had sufficient power in detecting the interaction effect, these factors may have resulted in a misrepresentation of the population as a whole, which limits the generalisability of our results. In addition, though a statistically significant difference was found between males and females, a mean difference of 0.30-0.55 with a small-medium effect size may not be practically important. Thus, it is more appropriate to conclude that PFU and online social behaviour had a similar effect on males and females alike.

The second aim of this study was to examine the correlation between the two subtypes of narcissism and PFU in comparison to the Big Five personality traits. Researchers have attempted to examine the structure and nature of personality in a variety of different ways, however, the Five Factor Model remains the dominant theoretical perspective used in psychological research (Eşkisu et al., 2017). As multiple studies have found a positive relationship between narcissism and PFU (Andreassen et al., 2017; Carpenter, 2012; March & McBean, 2018), Hypothesis 2 proposed the relationship between grandiose and vulnerable

narcissism with PFU would be stronger and more positive than compared to the five domains of openness, conscientiousness, extraversion, agreeableness and neuroticism. These findings were supported.

The correlation results for the Big Five personality traits demonstrated mixed results. Consistent with the literature, it was found that conscientiousness and agreeableness had a negative relationship with PFU, while neuroticism had a positive relationship (Marshall, Lefringhausen, & Ferenczi, 2015; Seidman, 2013; Skues et al., 2012). It was also found that all personality traits correlated significantly with PFU, with the exclusion of extraversion. This was an unexpected finding, as multiple studies have reported a significant relationship between extraversion and Facebook (Eşkisu et al., 2017; Marino et al., 2016; Marshall et al., 2015; Seidman, 2013). Moreover, extraversion was found to have a significant and positive correlation with both Facebook intensity ($r_s(95) = 0.15$, $p < .001$), and Facebook activity ($r_s(95) = 0.24$, $p < .001$), but not with PFU. Another unexpected finding was that our results demonstrated a negative relationship between openness and PFU, yet previous research has reported a positive association (Seidman, 2013). A possible explanation for this finding is that those high in openness tend to use Facebook for finding and disseminating information, but not for socialising (Eşkisu et al., 2017). It is possible that when answering questions relating to PFU, those high in openness interpreted the questions in regards to sociability, and therefore a negative association resulted. By finding a stronger relationship between narcissism and PFU comparative to the Big Five, these findings support up-to-date social media research, emphasising the utility in examining PFU with specific individual constructs.

The third aim of this study was to determine the extent to which grandiose and vulnerable narcissism were predictive of PFU, with several personality predictors being considered. Findings from Hypothesis 2 had implications for our results, as it was found that

FoMo was the strongest predictor of PFU and not narcissism. An important consideration to note is the difference in correlation strength. The correlation coefficient difference (r_s) between PFU and FoMo ($r_s(95) = 0.47$, $p < .001$) was only 0.04% stronger when compared to vulnerable narcissism ($r_s(95) = 0.43$, $p < .001$) and 0.16% stronger when compared to grandiose narcissism ($r_s(95) = 0.31$, $p < .001$). As the difference in relationship strength was minimal, it is more appropriate to conclude that PFU had a similar relationship with both subtypes of narcissism and FoMo. After controlling for gender, online social behaviour, mood symptoms, and FoMo, it was found that Hypothesis 3, which predicted that grandiose and vulnerable narcissism would be significant predictors of PFU, was not supported. Based on the correlations conducted for Hypothesis 2, these results were not unexpected. Indeed, previous research has demonstrated FoMo is predictive of increased Facebook engagement (Beyens et al., 2016), envy and loneliness (Hetz et al., 2015), and increased stress related to Facebook use (Stead & Bibby, 2017) which are all indicative factors of PFU (Perrone, 2016). Comparatively, previous research has found similar findings when assessing narcissism and PFU (Ozimek et al., 2018). A plausible explanation for these results is that narcissism (specifically vulnerable narcissism) would not provide any additional explained variance in PFU because it is almost identical in structure to FoMo. As a result, the distinction between narcissism and FoMo provides an important empirical basis from which mechanisms of PFU can be researched and predicted. In addition, it is important to note that as correlations are only bivariate relationships they are not causal, which limits our findings.

4.3 Limitations and Methodological Considerations

Additional limitations and methodological considerations should be taken into account when interpreting the results. Firstly, participants were recruited via a convenience sample, which provides a relatively narrow cross-section of participants that may have

reduced the external validity and reliability of outcomes. If future research is interested in exploring PFU in student samples, a recommendation is to increase the diversity of student groups to determine if PFU differs by course, or year of study. If future research is interested in exploring PFU in the broader population, a recommendation is to establish a representative distribution of the population that balances gender and age discrepancies. As our results indicated, females reported higher PFU and online social behaviour than males, though this difference was notably small. It may be worth differentiating between the frequency of Facebook use (i.e., time spent on the site) and the quality of Facebook use (i.e., Facebook intensity and activity) to establish whether one is more important in explaining gender differences that can contribute towards developing PFU.

In addition, while Facebook use continues to be most common in young people (i.e., under the age of 25), adults over the age of 24 are the fastest growing age segment using Facebook, with the most common age demographic of Facebook users in 2017 being between the ages of 25 and 34 (Noyes, 2017). Although this study utilised a large range of age groups (18-57 years, M = 23.60), this was not a primary focus of our research. March and McBean (2018) make a notable recommendation that future research could explore age as categorical generations (e.g., Baby Boomers, Generation X, Millennials) in an effort to explore how age influences the relationship between personality and PFU. This could also provide insight for exploring narcissism. Another limitation was employing self-report measures, as this leaves the data potentially vulnerable to social desirability bias. As self-report measures rely on truthful answering, it is possible participants may have tailored their responses to portray a specific self-image or outright fabricated their results. A contributing factor to this is that participants were not monitored when completing the study in a controlled scientific setting.

Furthermore, there are methodological considerations to contemplate when assessing the measures that were used in this study. Firstly, PFU was adapted via the SMDS, which measures social media addiction. However, individuals who have PFU may not have social media addiction, and therefore individuals with PFU may have been misrepresented in our study. Future research should combat the aforementioned shortcomings by including an additional measure of PFU that specifically measures problematic use, such as the Problematic Facebook Use Scale (PFUS) adapted from Caplan's Generalized Problematic Internet Scale model (Marino et al., 2018). In addition, due to the assortment of 52 questions measuring narcissism, there were increased dropout rates for this measure. As an alternative, future research should use a shorter narcissism scale, such as the PNI-28 (Pincus et al., 2009) as this may result in an increased sample size. The TIPI was used to measure the Big Five personality traits however, as noted in our results, this measure may have been too limiting in precisely measuring personality traits in our sample. A recommendation would be to utilise a standard multi-item instrument of personality such as the Big Five Inventory (BFI), as this has stronger psychometric properties than the TIPI (Gosling et al., 2003).

4.4 Significance and Implications for Future Research

A key strength of the study was our large sample size and the use of validated instruments in assessing the study's key variables. By exploring the relationship between narcissism and PFU, our findings revealed promising outcomes for the direction of future social media research. The tendency to problematically use Facebook could be explained, to some degree, by narcissistic tendencies. As the two subtypes of grandiose and vulnerable narcissism are relatively recent to the literature, these findings are consistent with current studies that indicate narcissism is predictive of PFU. Our research proposes that instead of focusing on the mechanisms in which Facebook influences behaviour, such as motivations,

forms of usage, and social comparisons, these mechanisms could potentially be explained by individuals who have elevated narcissistic traits. Moreover, our findings indicate that exploring PFU with individual constructs such as FoMo warrant priority in current research. As deficits in psychological needs may increase people's sensitivity to develop a fear of missing out, our findings indicate it is probable that individuals with increased levels of FoMo develop a dependence on Facebook as a self-regulation tool in the same way that individuals with vulnerable narcissism do. A study that tests the differences in predictive ability between these two groups in a clinical population would provide insight to future research on PFU.

Correspondingly, the results from our correlation matrix indicated that the three strongest personality variables with PFU all had underlying characteristics of anxiety (i.e., FoMo, vulnerable narcissism and stress). This suggests that anxiety-based personal characteristics may be a risk factor for developing PFU. In an effort to generalise results, future research should seek to explore PFU and personality characteristics cross-culturally and by socio-economic status. Finally, the current study should be replicated, because this will establish a greater body of evidence in the area of PFU. As Facebook is only one social media platform among many others, replication using another SNS (such as Instagram or Snapchat) would help to increase the generalisability of the results and would further confirm the theoretical framework for PFU and narcissism.

4.5 Conclusion

The findings presented in this study have promising theoretical and practical implications for continued research in the areas of narcissism and social media research. The results provide meaningful insight into how narcissism and additional personality variables

can be used to predict risk factors for developing PFU. Our findings demonstrate that these risk factors include gender differences (i.e., being female), Facebook intensity, and FoMo. As PFU is a new area of research, our findings hope to provide a valuable starting point in examining how individual personality constructs can be predictive of developing PFU. Although social media use is a widespread behaviour, the current study proposes that individuals with some of these characteristics could potentially be targets for interventions that aim to prevent addictive and problematic online behaviour. As global usage of Facebook continues to increase, the ability to understand the implications of its use and the characteristics of its users is paramount in directing future research and intervention.

References

Andreassen, C. S., Pallesen, S., & Griffiths, M. D. (2017). The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. *Addictive Behaviors, 64*, 287-293. doi:10.1016/j.addbeh.2016.03.006

Banjanin, N., Banjanin, N., Dimitrijevic, I., & Pantic, I. (2015). Relationship between internet use and depression: Focus on physiological mood oscillations, social networking and online addictive behavior. *Computers in Human Behavior, 43*, 308-312. doi:10.1016/j.chb.2014.11.013

Beyens, I., Frison, E., & Eggermont, S. (2016). "I don't want to miss a thing": Adolescents' fear of missing out and its relationship to adolescents' social needs, Facebook use, and Facebook related stress. *Computers in Human Behavior, 64*, 1-8. doi:10.1016/j.chb.2016.05.083

Biernatowska, A. (2017). Gender differences in using Facebook-preliminary analysis. *Research Gate, 1*(3), 5.

Bogart, L. M., Benotsch, E. G., & Pavlovic, J. D. P. (2004). Feeling Superior but Threatened: The Relation of Narcissism to Social Comparison. *Basic and Applied Social Psychology, 26*(1), 35-44. doi:10.1207/s15324834basp2601_4

Burke, T. J., & Ruppel, E. K. (2014). Facebook Self-Presentational Motives: Daily Effects on Social Anxiety and Interaction Success. *Communication Studies, 66*(2), 204-217. doi:10.1080/10510974.2014.884014

Carpenter, C. J. (2012). Narcissism on Facebook: Self-promotional and anti-social behavior. *Personality and Individual Differences, 52*(4), 482-486. doi:10.1016/j.paid.2011.11.011

Chow, T. S., & Wan, H. Y. (2017). Is there any 'Facebook Depression'? Exploring the moderating roles of neuroticism, Facebook social comparison and envy. *Personality and Individual Differences, 119*, 277-282. doi:10.1016/j.paid.2017.07.032

Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-Determination Theory in Work Organizations: The State of a Science. *Annual Review of Organizational Psychology and Organizational Behavior, 4*, 24. doi: 032516-113108

Elhai, J. D., Levine, J. C., Dvorak, R. D., & Hall, B. J. (2016). Fear of missing out, need for touch, anxiety and depression are related to problematic smartphone use. *Computers in Human Behavior, 63*, 509-516. doi:10.1016/j.chb.2016.05.079

Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The Benefits of Facebook "Friends:" Social Capital and College Students' Use of Online Social Network Sites. *Journal of Computer-Mediated Communication, 12*(4), 1143-1168. doi:10.1111/j.1083-6101.2007.00367.x

Eşkisu, M., Hoşoğlu, R., & Rasmussen, K. (2017). An investigation of the relationship between Facebook usage, Big Five, self-esteem and narcissism. *Computers in Human Behavior, 69*, 294-301. doi:10.1016/j.chb.2016.12.036

Ferrara, E., & Yang, Z. (2015). Measuring Emotional Contagion in Social Media. *PLoS One, 10*(11), e0142390. doi:10.1371/journal.pone.0142390

Frost, R. L., & Rickwood, D. J. (2017). A systematic review of the mental health outcomes associated with Facebook use. *Computers in Human Behavior, 76*, 576-600. doi:10.1016/j.chb.2017.08.001

Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality, 37*, 504-528. doi:10.1016/S0092-6566(03)00046-1

große Deters, F., Mehl, M. R., & Eid, M. (2014). Narcissistic power poster? On the relationship between narcissism and status updating activity on Facebook. *Journal of Research in Personality, 53*, 165-174. doi:10.1016/j.jrp.2014.10.004

Hetz, P. R., Dawson, C. L., & Cullen, T. A. (2015). Social Media Use and the Fear of Missing Out (FoMO) While Studying Abroad. *Journal of Research on Technology in Education, 47*(4), 259-272. doi:10.1080/15391523.2015.1080585

Indian, M., & Grieve, R. (2014). When Facebook is easier than face-to-face: Social support derived from Facebook in socially anxious individuals. *Personality and Individual Differences, 59*, 102-106. doi:10.1016/j.paid.2013.11.016

Jenkins-Guarnieri, M. A., Wright, S. L., & Hudiburgh, L. M. (2012). The relationships among attachment style, personality traits, interpersonal competency, and Facebook use. *Journal of Applied Developmental Psychology, 33*(6), 294-301. doi:10.1016/j.appdev.2012.08.001

Lin, R., & Utz, S. (2015). The emotional responses of browsing Facebook: Happiness, envy, and the role of tie strength. *Comput Human Behav, 52*, 29-38. doi:10.1016/j.chb.2015.04.064

March, E., & McBean, T. (2018). New evidence shows self-esteem moderates the relationship between narcissism and selfies. *Personality and Individual Differences, 130*, 107-111. doi:10.1016/j.paid.2018.03.053

Marino, C., Gini, G., Vieno, A., & Spada, M. M. (2018). A comprehensive meta-analysis on Problematic Facebook Use. *Computers in Human Behavior, 83*, 262-277. doi:10.1016/j.chb.2018.02.009

Marino, C., Vieno, A., Moss, A. C., Caselli, G., Nikčević, A. V., & Spada, M. M. (2016). Personality, motives and metacognitions as predictors of problematic Facebook Use

in university students. *Personality and Individual Differences, 101,* 70-77. doi:10.1016/j.paid.2016.05.053

Marshall, T. C., Lefringhausen, K., & Ferenczi, N. (2015). The Big Five, self-esteem, and narcissism as predictors of the topics people write about in Facebook status updates. *Personality and Individual Differences, 85,* 35-40. doi:10.1016/j.paid.2015.04.039

Morris, E. (2013). She Likes it, He Doesn't: Gender Differences in Facebook Communication Behaviours. *Department of Communication, 1*(6), 38.

Noyes, D. (2017). The Top 20 Valuable Facebook Statistics Retrieved from https://zephoria.com/top-15-valuable-facebook-statistics/

Oldmeadow, J. A., Quinn, S., & Kowert, R. (2013). Attachment style, social skills, and Facebook use amongst adults. *Computers in Human Behavior, 29*(3), 1142-1149. doi:10.1016/j.chb.2012.10.006

Ozimek, P., Bierhoff, H.-W., & Hanke, S. (2018). Do vulnerable narcissists profit more from Facebook use than grandiose narcissists? An examination of narcissistic Facebook use in the light of self-regulation and social comparison theory. *Personality and Individual Differences, 124,* 168-177. doi:10.1016/j.paid.2017.12.016

Pantic, I. (2014). Online social networking and mental health. *Cyberpsychol Behav Soc Netw, 17*(10), 652-657. doi:10.1089/cyber.2014.0070

Perrone, M. A. (2016). *#FoMO: Establishing validity of the Fear of Missing Out scale with an adolescent population.* (Doctor of Philosophy Doctor of Philosophy), Alfred, Alfred, New York.

Pettijohn, T. F., LaPiene, K. E., & Horting, A. L. (2012). Relationships between Facebook Intensity, Friendship Contingent Self-Esteem, and Personality in U.S. College Students. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 6*(1), 8. doi:10.5817/CP2012-1-2

Pincus, A. L., Ansell, E. B., Pimentel, C. A., Cain, N. M., Wright, A. G. C., & Levy, K. N. (2009). Initial Construction and Validation of the Pathological Narcissism Inventory. *American Psychological Association, 21*(3), 365-379. doi:10.1037/a0016530

Primack, B. A., Shensa, A., Escobar-Viera, C. G., Barrett, E. L., Sidani, J. E., Colditz, J. B., & James, A. E. (2017). Use of multiple social media platforms and symptoms of depression and anxiety: A nationally-representative study among U.S. young adults. *Computers in Human Behavior, 69*, 1-9. doi:10.1016/j.chb.2016.11.013

Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior, 29*(4), 7. doi:https://doi.org/10.1016/j.chb.2013.02.014

Puntschart, I., Tochtermann, K., & Dösinger, G. (2006). *Pitfalls and Potentials of Social Software in Higher Education*. Paper presented at the Proceedings of WEBIST 2006 - Second International Conference on Web Information Systems and Technologies.

Ross, C., Orr, E. S., Sisic. M, Arseneault, J. M., Simmering, M. G., & Orr, R. (2009). Personality and motivations associated with Facebook use. *Computers in Human Behavior, 25*(2), 578-586. doi:https://doi.org/10.1016/j.chb.2008.12.024

Ryan, T., & Xenos, S. (2011). Who uses Facebook? An investigation into the relationship between the Big Five, shyness, narcissism, loneliness, and Facebook usage. *Computers in Human Behavior, 27*(5), 1658-1664. doi:10.1016/j.chb.2011.02.004

Seidman, G. (2013). Self-presentation and belonging on Facebook: How personality influences social media use and motivations. *Personality and Individual Differences, 54*(3), 402-407. doi:10.1016/j.paid.2012.10.009

Shaw, A. M., Timpano, K. R., Tran, T. B., & Joormann, J. (2015). Correlates of Facebook usage patterns: The relationship between passive Facebook use, social anxiety

symptoms, and brooding. *Computers in Human Behavior, 48*, 575-580. doi:10.1016/j.chb.2015.02.003

Simoncic, T. E., Kuhlman, K. R., Vargas, I., Houchins, S., & Lopez-Duran, N. L. (2014). Facebook use and depressive symptomatology: Investigating the role of neuroticism and extraversion in youth. *Computers in Human Behavior, 40*, 1-5. doi:10.1016/j.chb.2014.07.039

Singh, S., Farley, S. D., & Donahue, J. J. (2018). Grandiosity on display: Social media behaviors and dimensions of narcissism. *Personality and Individual Differences, 134*, 308-313. doi:10.1016/j.paid.2018.06.039

Skues, J. L., Williams, B., & Wise, L. (2012). The effects of personality traits, self-esteem, loneliness, and narcissism on Facebook use among university students. *Computers in Human Behavior, 28*(6), 2414-2419. doi:10.1016/j.chb.2012.07.012

Smith-Duff, C. (2012). *Facebook Use and its relationship with Self-Esteem, Personalities and Addictive Tendencies.* (Bachelor of Arts (Social Science)), DBS School of Arts Dublin, Dublin.

Stead, H., & Bibby, P. A. (2017). Personality, fear of missing out and problematic internet use and their relationship to subjective well-being. *Computers in Human Behavior, 76*, 534-540. doi:10.1016/j.chb.2017.08.016

Steers, M. L., Quist, M. C., Bryan, J. L., Foster, D. W., Young, C. M., & Neighbors, C. (2016). I Want You to Like Me: Extraversion, Need for Approval, and Time on Facebook as Predictors of Anxiety. *Transl Issues Psychol Sci, 2*(3), 283-293. doi:10.1037/tps0000082

van den Eijnden, R. J. J. M., Lemmens, J. S., & Valkenburg, P. M. (2016). The Social Media Disorder Scale. *Computers in Human Behavior, 61*, 478-487. doi:10.1016/j.chb.2016.03.038

Verduyn, P., Lee, D. S., Park, J., Shablack, H., Orvell, A., Bayer, J., . . . Kross, E. (2015). Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence. *Journal of Experimental Psychology: General, 144*(2), 480-488. doi:10.1037/xge0000057

Vogel, E. A., Rose, J. P., Roberts, L. R., & Eckles, K. (2014). Social comparison, social media, and self-esteem. *Psychology of Popular Media Culture, 3*(4), 206-222. doi:10.1037/ppm0000047

Wegmann, E., Oberst, U., Stodt, B., & Brand, M. (2017). Online-specific fear of missing out and Internet-use expectancies contribute to symptoms of Internet-communication disorder. *Addictive Behaviors Reports, 5*, 33-42. doi:10.1016/j.abrep.2017.04.001

Willems, J., & Bateman, D. (2011). The potentials and pitfalls of social networking sites such as Facebook in higher education contexts. *Proceedings ascilite, 4*(7). doi:https://doi.org/10.4135/9781452218540.n149

Appendices A – L

Appendix A: Explanatory Statement

Facebook Use and Personality

Participant Information Sheet

Hi there! My name is Eleanor Lontos and I am a Psychology Honours student at the University of Adelaide. I'd like to invite you to participate in a research study looking into the experiences of Facebook Use and Personality by completing a short survey!

What does the study involve?

Research has found that people's social media use differs according to personality types. For example, more extraverted users tend to share and interact with more content online. In this study, we aim to understand how different personality traits may be related to multiple aspects of Facebook use, including how Facebook use affects our mood and how we perceive ourselves in relation to other people. This study involves the voluntary completion of a survey that will ask questions relating to Facebook Use, personality traits, and mood symptoms. Your answers will be kept completely anonymous and the completion of the study is expected to take no more than 15 minutes.

Why were you chosen for this research?

You have been chosen to participate because you are 18+ years in age, fluent in English, and have your own personal Facebook account that you use at least once a week.

What are the possible benefits to participants?

Aside from making a valuable contribution to our understanding of patterns and causes of Facebook Use and personality, participants have the opportunity to receive compensation for their time:

- Psychology 1A & 1B students at the University of Adelaide may receive course credit.
- Other participants may elect to go into the draw to receive 1 of 10 $25 Coles MYER gift cards.

What are the possible risks to participants?

The risks involved by taking part in this research are considered to be minimal and are no greater than what you would encounter in your day-to-day Facebook use. However, as certain questions relate to experiencing mood symptoms, there is a small risk that some questions may make participants feel uncomfortable. If this study does raise any issues for you, we encourage you to seek support from Lifeline (13 11 44) or beyondblue (https://www.beyondblue.org.au).

Withdrawing from the research:

You can withdraw from the study without comment or penalty and your data will be kept anonymous. As participants are unable to be identified during all stages of the study, there is no risk associated with the identification of sensitive information in this research.

Storage of data:

The data collected for this study will be encrypted, stored securely and is only accessible by the researchers as per the University requirements.

For more information:

This study has been approved by the Human Research Ethics subcommittee in the School of Psychology at the University of Adelaide (HREC approval number: 18/62) If you have any queries regarding the study, please contact me at eleanor.lontos@student.adelaide.edu.au. For any concerns about the ethical conduct of this research, please contact Mr Paul Delfabbro, chair of the Human Research Subcommittee in the School of Psychology, University of Adelaide, at paul.delfabbro@adelaide.edu.au.

Appendix B: Consent Form

1. By giving your consent below, you affirm that:

- You have read and fully understand the information on the study. You agree to take part in the study as described above.
- You are 18 years of age or older.
- You are fluent in English and have a Facebook account.
- Procedures and potential risks of the study have been explained to your satisfaction.

◯ I consent

2. Research Participation System ID for Psychology 1A & 1B students only:

(Note: Please enter your Research Participation System ID, NOT your student number)

Appendix C: Collection of Demographic Data

Facebook Use and Personality

* 3. What is your age?

* 4. What is your gender?

- ○ Male
- ○ Female
- ○ Other

* 5. What is the highest level of education that you have completed?

- ○ Less than High School degree
- ○ High School degree or equivalent
- ○ TAFE certificate / apprenticeship or equivalent
- ○ University, but no degree
- ○ Bachelor Degree
- ○ Honours / Graduate Diploma
- ○ Masters / PhD

* 6. Which of the following categories best describes your employment status?

- ☐ Student
- ☐ Employed, working full-time
- ☐ Employed, working part-time / casual
- ☐ Not employed
- ☐ Other

* 7. Which of the following best describes your sexual orientation?

- ○ Heterosexual
- ○ Homosexual
- ○ Bisexual
- ○ Other
- ○ Prefer not to say

* 8. Which of the following best describes your current relationship status?

- ○ Single
- ○ In a relationship
- ○ Engaged / Married
- ○ Separated / Divorced

* 9. Which of the following best describes your ethnicity?

- ○ Caucasian
- ○ Indigenous or Torres Strait Islander
- ○ Black
- ○ Asian
- ○ Latino / Hispanic
- ○ Middle Eastern
- ○ Other

* 10. What social media platforms do you actively use? (i.e. more than once a week)

- ☐ Facebook
- ☐ Instagram
- ☐ Snapchat
- ☐ YouTube
- ☐ Twitter
- ☐ LinkedIn
- ☐ Pinterest
- ☐ Reddit

Appendix D: Survey

* 11. Please rate the following statements relating to Facebook Use

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Facebook is part of my everyday activity	○	○	○	○	○
I am proud to tell people I am on Facebook	○	○	○	○	○
I dedicate part of my daily schedule to Facebook	○	○	○	○	○
I feel out of touch when I haven't logged onto Facebook in a while	○	○	○	○	○
I feel I am part of the Facebook community	○	○	○	○	○

* 12. Please rate the frequency to which you do the following on Facebook

	Never	Rarely	Occasionally	Regularly	Very regularly
Checking your own profile	○	○	○	○	○
Checking to see what someone is up to	○	○	○	○	○
Scrolling through your newsfeed	○	○	○	○	○
Liking pages/memes	○	○	○	○	○
Tagging on pages/memes	○	○	○	○	○
Posting status updates	○	○	○	○	○
Sharing links	○	○	○	○	○
Posting photos	○	○	○	○	○
Liking other people's photos	○	○	○	○	○
Commenting on other people's photos	○	○	○	○	○
Sending private messages	○	○	○	○	○
RSVPing to events	○	○	○	○	○

* 13. During the past year have you...

	Yes	No
Regularly found that you can't think of anything else but the moment that you will be able to use social media again?	○	○
Regularly felt dissatisfied because you wanted to spend more time on social media?	○	○
Often felt bad when you could not use social media?	○	○
Tried to spend less time on social media, but failed?	○	○
Regularly neglected other activities (e.g. hobbies, sport) because you wanted to use social media?	○	○
Regularly had arguments with others because of your social media use?	○	○
Regularly lied to your parents or friends about the amount of time you spend on social media?	○	○
Often used social media to escape from negative feelings?	○	○
Had serious conflict with your partner, friends and/or parents because of your social media use?	○	○

* 14. Please rate the following statements regarding your Facebook Use

	Not at all true of me	Slightly true of me	Moderately true of me	Very true of me	Extremely true of me
I fear others miss my Facebook content when I haven't posted in a while	○	○	○	○	○
I fear my friends have better Facebook profiles than me	○	○	○	○	○
I get worried when I cannot access my Facebook	○	○	○	○	○
I like to admire my Facebook profile	○	○	○	○	○
My Facebook profile is more interesting and unique than my friends' pages	○	○	○	○	○
Sometimes I wonder if I spend too much time managing my Facebook profile	○	○	○	○	○
It bothers me when I miss an opportunity to post a photo or status update	○	○	○	○	○
When I have a good time it is important for me to share the details online (e.g. posting photos, updating status)	○	○	○	○	○

* 15. Please read each statement and indicate how much it applies to you

	Not at all true of me	Slightly true of me	Moderately true of me	Very true of me	Extremely true of me
I fear others have more rewarding experiences than me	○	○	○	○	○
I fear my friends have more rewarding experiences than me	○	○	○	○	○
I get worried when I find out my friends are having fun without me	○	○	○	○	○
I get anxious when I don't know what my friends are up to	○	○	○	○	○
It is important that I understand my friends "in jokes"	○	○	○	○	○
Sometimes, I wonder if I spend too much time keeping up with what is going on	○	○	○	○	○
It bothers me when I miss an opportunity to meet up with friends	○	○	○	○	○
When I have a good time it is important for me to share the details online (e.g. updating status)	○	○	○	○	○
When I miss out on a planned get-together it bothers me	○	○	○	○	○
When I go on a holiday, I continue to keep tabs on what my friends are doing	○	○	○	○	○

16. Please read each statement and indicate how much it applied to you over the last week. Do not spend too much time on any statement

	Did not apply to me at all	Applied to me some of the time	Applied to me a good part of the time	Applied to me most of the time
I found it hard to wind down	○	○	○	○
I was aware of dryness of my mouth	○	○	○	○
I couldn't seem to experience any positive feeling at all	○	○	○	○
I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	○	○	○	○
I found it difficult to work up the initiative to do things	○	○	○	○
I tended to over-react to situations	○	○	○	○
I experienced trembling (e.g. in the hands)	○	○	○	○
I felt that I was using a lot of nervous energy	○	○	○	○
I was worried about situations in which I might panic and make a fool of myself	○	○	○	○
I felt that I had nothing to look forward to	○	○	○	○
I found myself getting agitated	○	○	○	○
I found it difficult to relax	○	○	○	○

	Did not apply to me at all	Applied to me some of the time	Applied to me a good part of the time	Applied to me most of the time
I felt down-hearted and blue	○	○	○	○
I was intolerant of anything that kept me from getting on with what I was doing	○	○	○	○
I felt I was close to panic	○	○	○	○
I was unable to become enthusiastic about anything	○	○	○	○
I felt I wasn't worth much as a person	○	○	○	○
I felt that I was rather touchy	○	○	○	○
I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	○	○	○	○
I felt scared without any good reason	○	○	○	○
I felt that life was meaningless	○	○	○	○

* 17. I see myself as...

	Disagree strongly	Disagree moderately	Disagree a little	Neither agree nor disagree	Agree a little	Agree moderately	Agree strongly
Extraverted, enthusiastic	○	○	○	○	○	○	○
Critical, quarrelsome	○	○	○	○	○	○	○
Dependable, self-disciplined	○	○	○	○	○	○	○
Anxious, easily upset	○	○	○	○	○	○	○
Open to new experiences, complex	○	○	○	○	○	○	○
Reserved, quiet	○	○	○	○	○	○	○
Sympathetic, warm	○	○	○	○	○	○	○
Disorganised, careless	○	○	○	○	○	○	○
Calm, emotionally stable	○	○	○	○	○	○	○
Conventional, uncreative	○	○	○	○	○	○	○

* 18. Please consider each of the following statements and indicate how well that statement describes you. There are no right or wrong answers

	Not at all like me	Moderately unlike me	A little unlike me	A little like me	Moderately like me	Very much like me
I often fantasise about being admired and respected	○	○	○	○	○	○
My self-esteem fluctuates a lot	○	○	○	○	○	○
I sometimes feel ashamed about my expectations of others when they disappoint me	○	○	○	○	○	○
I can usually talk my way out of anything	○	○	○	○	○	○
It's hard for me to feel good about myself when I'm alone	○	○	○	○	○	○
I can make myself feel good by caring for others	○	○	○	○	○	○
I hate asking for help	○	○	○	○	○	○
When people don't notice me, I start to feel bad about myself	○	○	○	○	○	○
I often hide my needs for fear that others will see me as needy and dependent	○	○	○	○	○	○
I can make anyone believe anything I want them to	○	○	○	○	○	○
I get mad when people don't notice all that I do for them	○	○	○	○	○	○
I get annoyed by people who are not interested in what I say or do	○	○	○	○	○	○
I wouldn't disclose all my intimate thoughts and feelings to someone I didn't admire	○	○	○	○	○	○
I often fantasise about having a huge impact on the world around me	○	○	○	○	○	○
I find it easy to manipulate people	○	○	○	○	○	○
When others don't notice me, I start to feel worthless	○	○	○	○	○	○
Sometimes I avoid people because I'm concerned that they'll disappoint me	○	○	○	○	○	○
I typically get very angry when I'm unable to get what I want from others	○	○	○	○	○	○

* 19. Please consider each of the following statements and indicate how well that statement describes you. There are no right or wrong answers

	Not at all like me	Moderately unlike me	A little unlike me	A little like me	Moderately like me	Very much like me
I sometimes need important others in my life to reassure me of my self-worth	○	○	○	○	○	○
When I do things for other people, I expect them to do things for me	○	○	○	○	○	○
When others don't meet my expectations, I often feel ashamed about what I wanted	○	○	○	○	○	○
I feel important when others rely on me	○	○	○	○	○	○
I can read people like a book	○	○	○	○	○	○
When others disappoint me, I often get angry at myself	○	○	○	○	○	○
Sacrificing for others makes me the better person	○	○	○	○	○	○
I often fantasise about accomplishing things that are probably beyond my means	○	○	○	○	○	○
Sometimes I avoid people because I'm afraid they won't do what I want them to do	○	○	○	○	○	○
It's hard to show others the weaknesses I feel inside	○	○	○	○	○	○
I get angry when criticised	○	○	○	○	○	○
It's hard to feel good about myself unless I know other people admire me	○	○	○	○	○	○
I often fantasise about being rewarded for my efforts	○	○	○	○	○	○
I am preoccupied with thoughts and concerns that most people are not interested in me	○	○	○	○	○	○
I like to have friends who rely on me because it makes me feel important	○	○	○	○	○	○
Sometimes I avoid people because I'm concerned they won't acknowledge what I do for them	○	○	○	○	○	○
Everybody likes to hear my stories	○	○	○	○	○	○

* 20. Please consider each of the following statements and indicate how well that statement describes you. There are no right or wrong answers

	Not at all like me	Moderately unlike me	A little unlike me	A little like me	Moderately like me	Very much like me
It's hard for me to feel good about myself unless I know other people like me	○	○	○	○	○	○
It irritates me when people don't notice how good a person I am	○	○	○	○	○	○
I will never be satisfied until I get all that I deserve	○	○	○	○	○	○
I try to show what a good person I am through my sacrifices	○	○	○	○	○	○
I am disappointed when people don't notice me	○	○	○	○	○	○
I often find myself envying others' accomplishments	○	○	○	○	○	○
I often fantasise about performing heroic deeds	○	○	○	○	○	○
I help others in order to prove I'm a good person	○	○	○	○	○	○
It's important to show people I can do it on my own even if I have some doubts inside	○	○	○	○	○	○
I often fantasise about being recognised for my accomplishments	○	○	○	○	○	○
I can't stand relying on other people because it makes me feel weak	○	○	○	○	○	○
When others don't respond to me the way that I would like them to, it is hard for me to still feel ok with myself	○	○	○	○	○	○
I need others to acknowledge me	○	○	○	○	○	○
I want to amount to something in the eyes of the world	○	○	○	○	○	○
When others get a glimpse of my needs, I feel anxious and ashamed	○	○	○	○	○	○
Sometimes it's easier to be alone than to face not getting everything I want from other people	○	○	○	○	○	○
I can get pretty angry when others disagree with me	○	○	○	○	○	○

Appendix E: Summary Statement

Facebook Use and Personality

End of Survey

Thank you for completing this survey! Your contribution to this study will provide insight into our understandings of patterns and causes of Facebook Use and associated personality traits.

Support:
If this study has raised any feelings of distress, we encourage you to contact:

Lifeline

(13 11 44) or (https://www.lifeline.org.au)
Lifeline provides 24/7 crisis support for all Australians through online, phone and face-to-face services. You can access Lifeline and talk to trained volunteers about issues such as suicidal thoughts or attempts, personal crisis, anxiety, depression, loneliness, abuse and trauma, stresses from work, family or society, and self-help information for friends and family.

beyondblue:

(1300 22 4636) or (https://www.beyondblue.org.au)
beyondblue provides 24/7 support for all Australians experiencing anxiety, depression or any related mental health issues. You can access beyondblue and talk to trained professionals about any of these concerns.

To contact the researchers:
Student Researcher
Eleanor Lontos
eleanor.lontos@student.adelaide.edu.au

Supervisor

Dr. Daniel King
daniel.king@adelaide.edu.au

To contact the ethics subcommittee:
Convener of the Subcommittee:

Professor Paul Delfabbro
paul.delfabbro@adelaide.edu.au

Thank you again for your time and participation!

21. If there are any comments you would like to make, please enter them below:

22. If you would like to go into the draw to win a $25 Coles MYER gift card, please enter your email address below:

Appendix F: Recruitment Material

Study Information

Study Name	Facebook Use and Personality
Study Type	**Online External Study** This study is an online study located on another website. Participants are not given access to the Study URL until after they sign up for the study.
Study Status	**Visible to participants :** Approved **Active study :** Appears on list of available studies **Online (web) study :** Administered outside the system
Duration	15 minutes
Credits	0.5 Credits

Description	Research has found that people's social media use differs according to personality types. In this study, we aim to understand how different personality traits may be related to multiple aspects of Facebook use, including how Facebook affects our mood and how we perceive ourselves in relation to other people.
Eligibility Requirements	You will need to be 18+ years in age, fluent in English, and have your own personal Facebook account that you use at least once a week.

Appendix G: Modifications to the Fear of Missing Out Scale

Original FoMo Items	***Modified FoMo Items***
1. I fear others have more rewarding experiences than me	I fear others miss my Facebook content when I haven't posted in a while
2. I fear my friends have more rewarding experiences than me	I fear my friends have better Facebook profiles than me
3. I get worried when I find out what my friends are up to	I get worried when I cannot access my Facebook
4. I get anxious when I don't know what my friends are up to	I like to admire my Facebook profile
5. It is important that I understand my friends "in jokes"	My Facebook profile is more interesting and unique than my friends' pages
6. Sometimes, I wonder if I spend too much time keeping up with what is going on	Sometimes I wonder if I spend too much time managing my Facebook profile
7. It bothers me when I miss an opportunity to meet up with friends	It bothers me when I miss an opportunity to post a photo or status update
8. When I have a good time it is important for me to share the details online (e.g., updating status)	When I have a good time it is important for me to share the details online (e.g., posting photos, updating status)
9. When I miss out on a planned get-together it bothers me	N/A
10. When I go on holiday, I continue to keep tables on what my friends are doing	N/A

Appendix H: Reliability Analysis

Scale: SMDS, FBI, FBQ, FoMo (Modified), FoMo (Original), DASS, TIPI, PNI

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.866	.867	7

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.650	.776	16

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.915	.918	7

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.772	.773	2

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.878	.878	4

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.890	.887	18

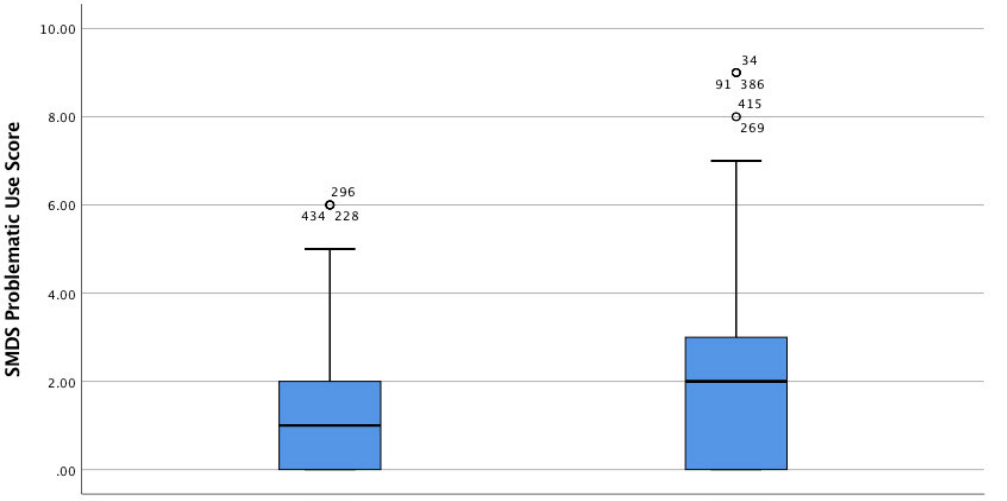
Reliability Statistics

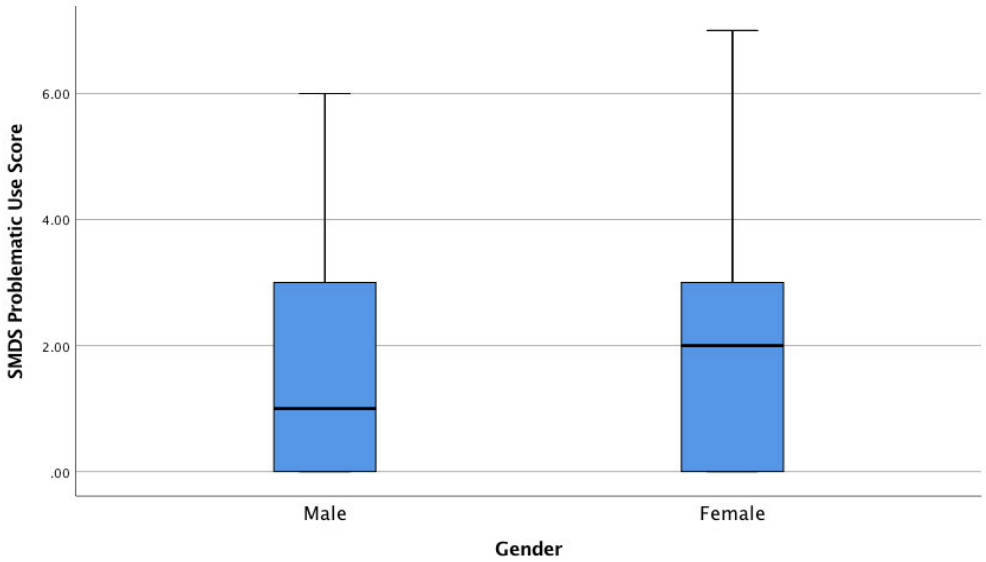
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.890	.887	18

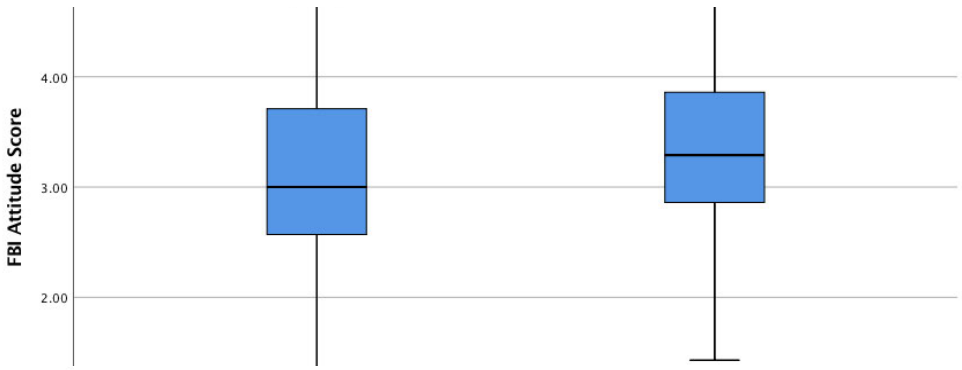
Reliability Statistics

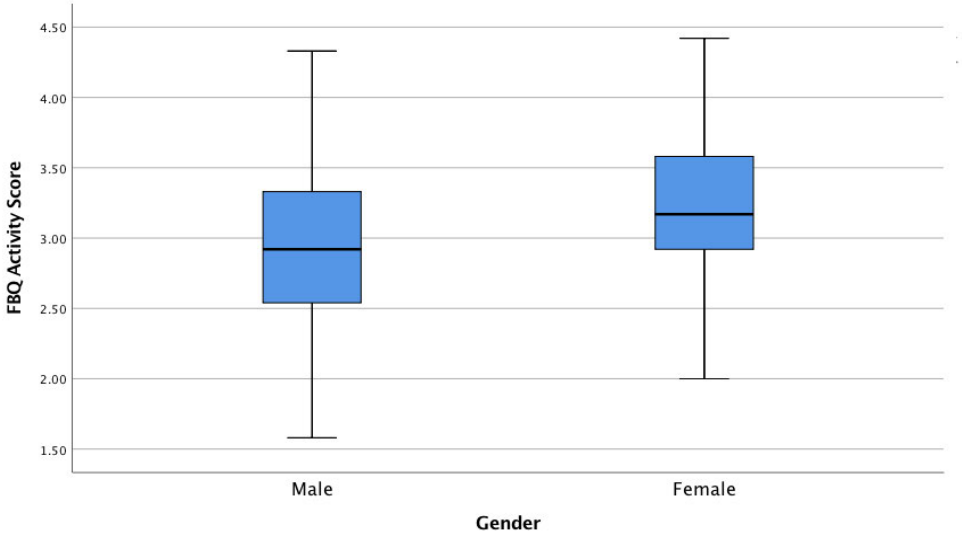
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.956	.956	34

Appendix I: Boxplots

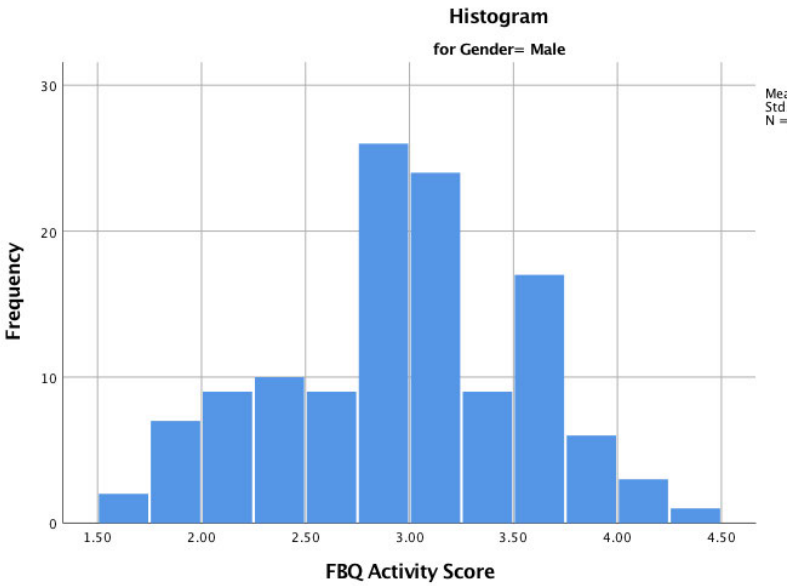


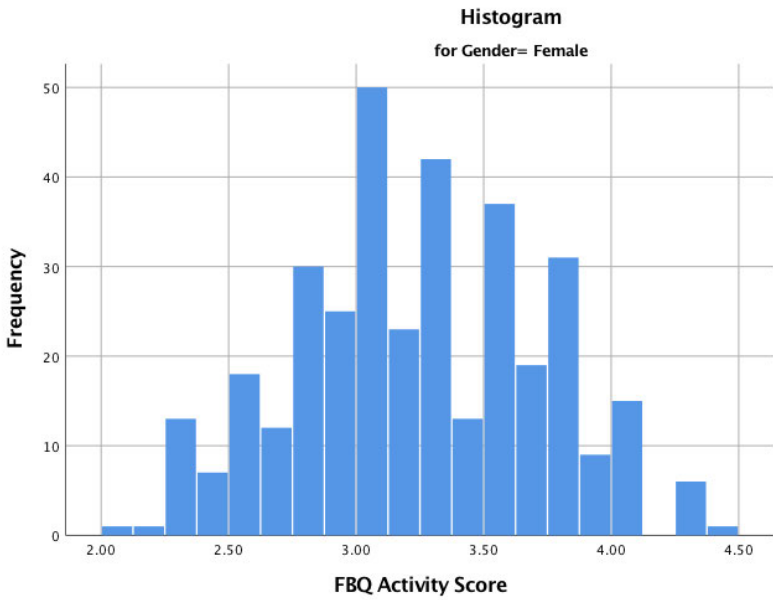


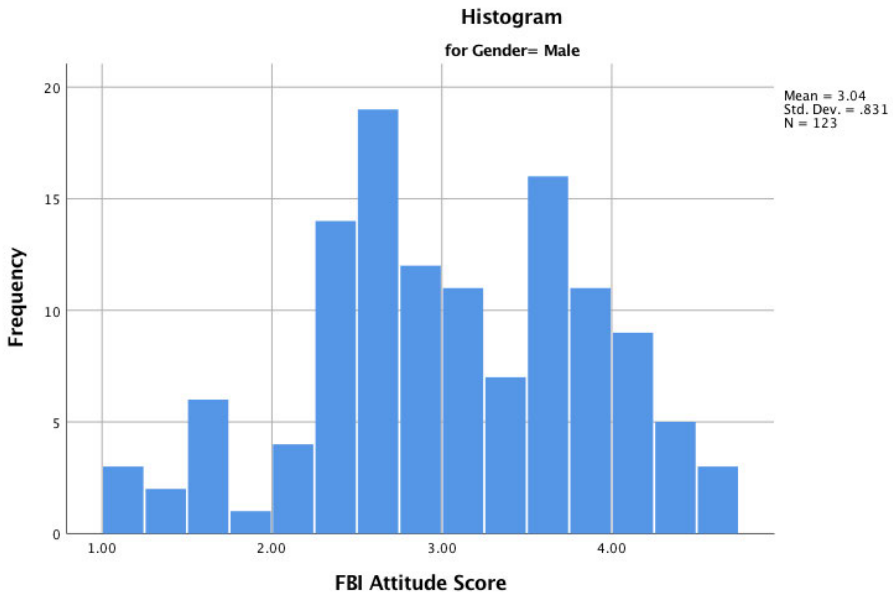


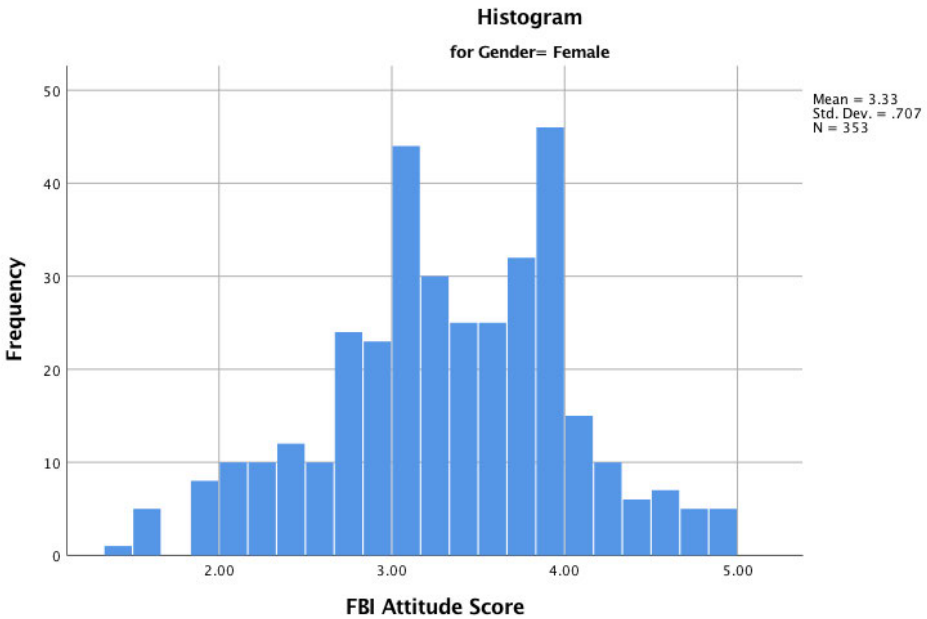


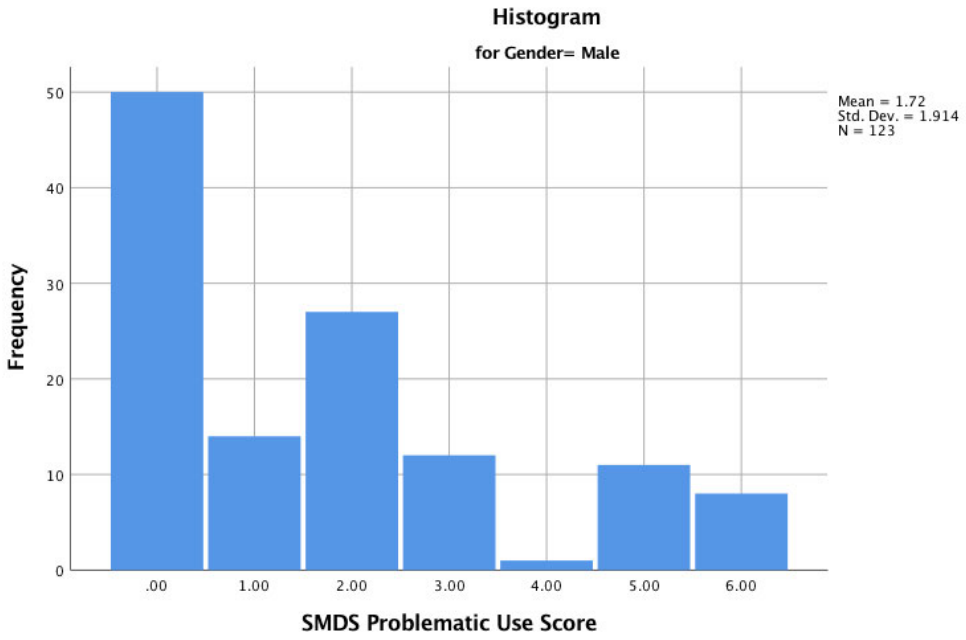
Appendix J: Histograms

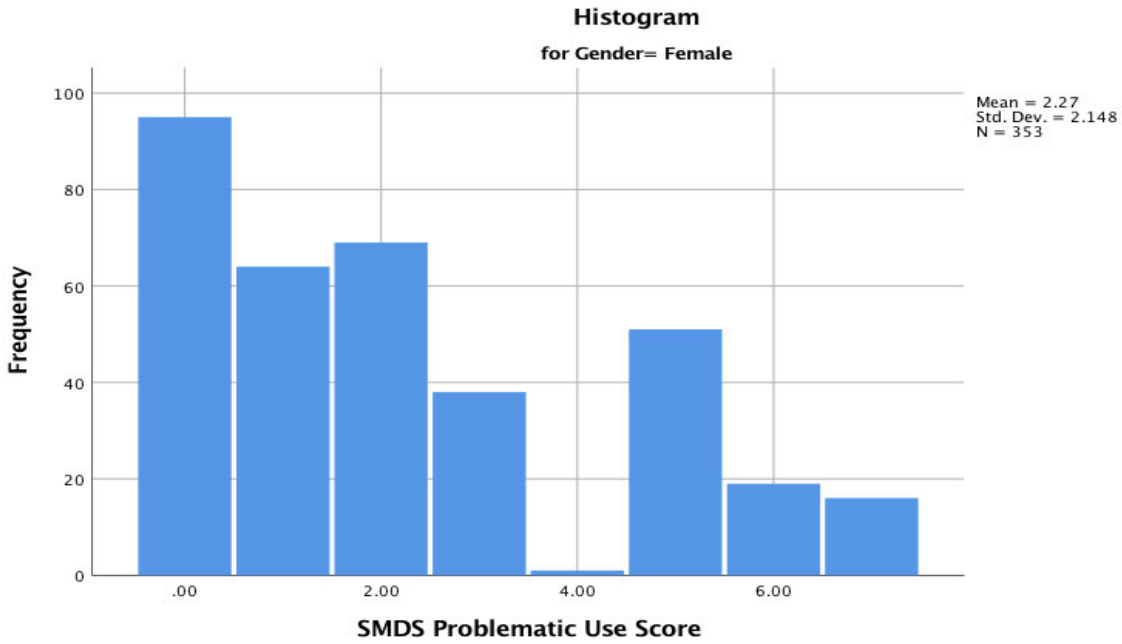


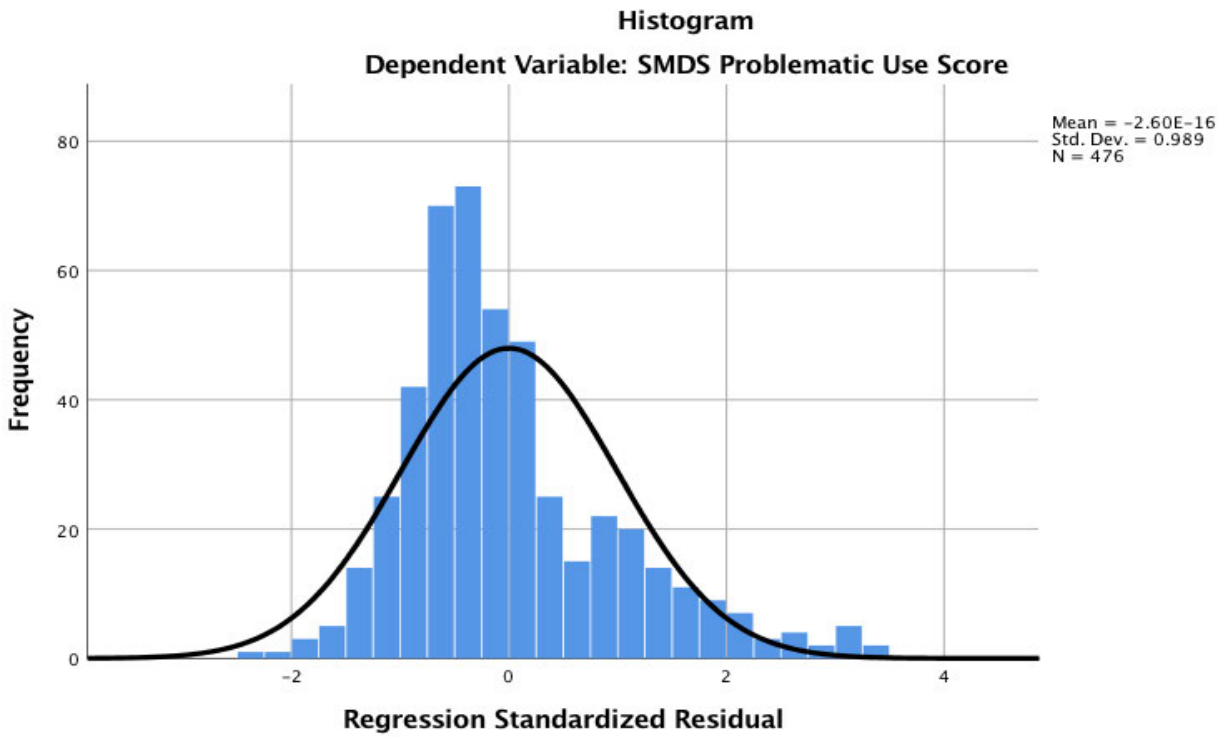




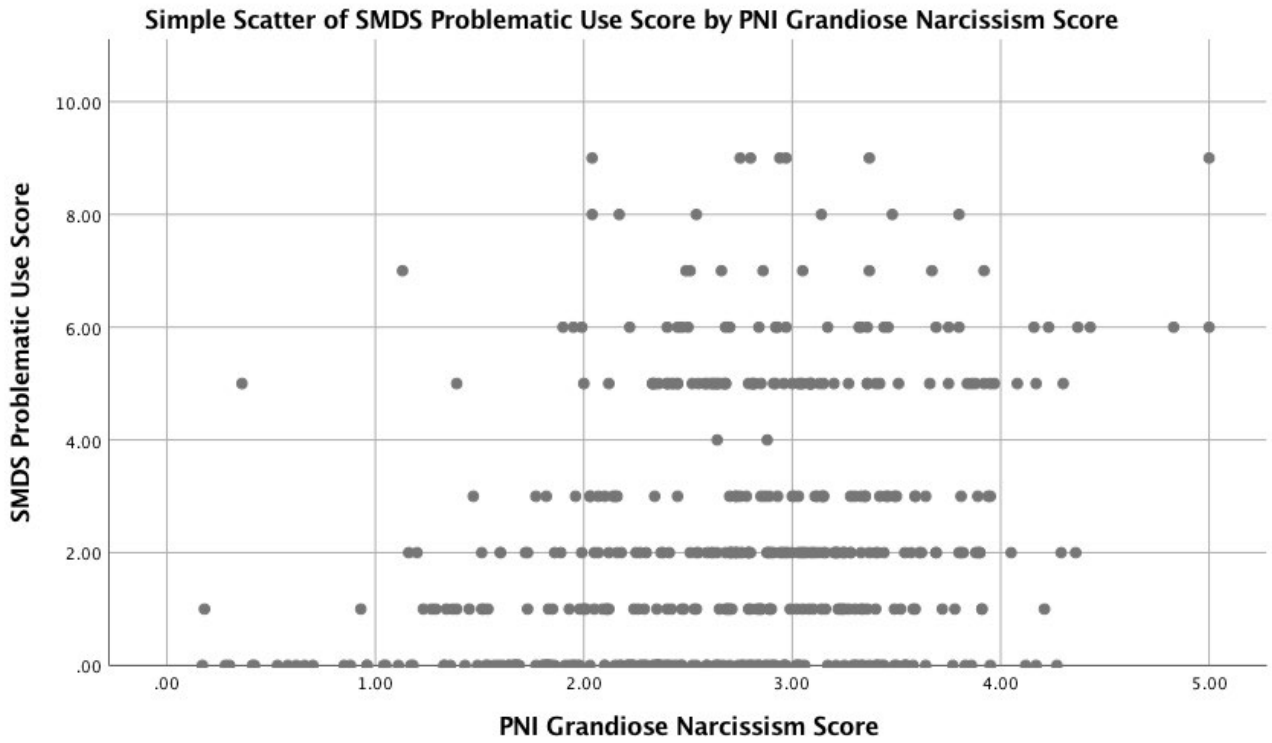


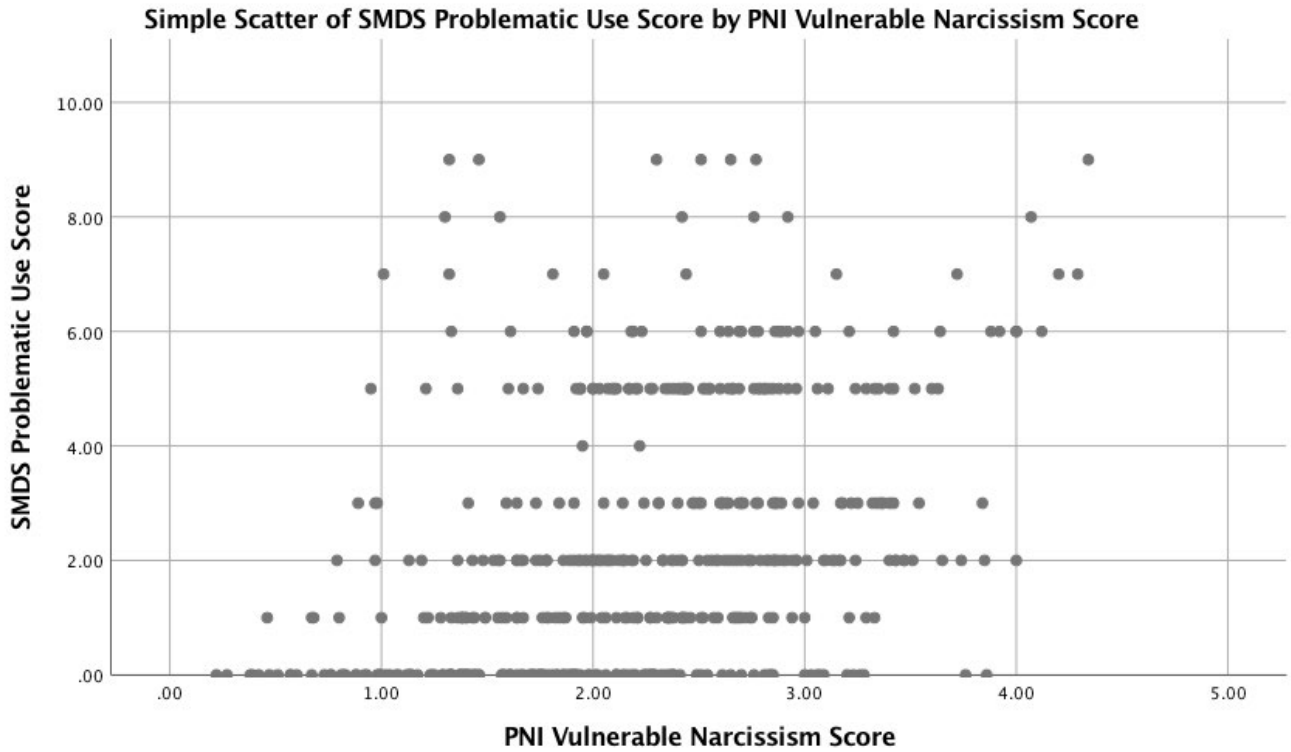

Histogram
for Gender= Male
Mean = 1.72
Std. Dev. = 1.914
N = 123
Frequency
0
10
20
30
40
50
.00
1.00
2.00
3.00
4.00
5.00
6.00
SMDS Problematic Use Score

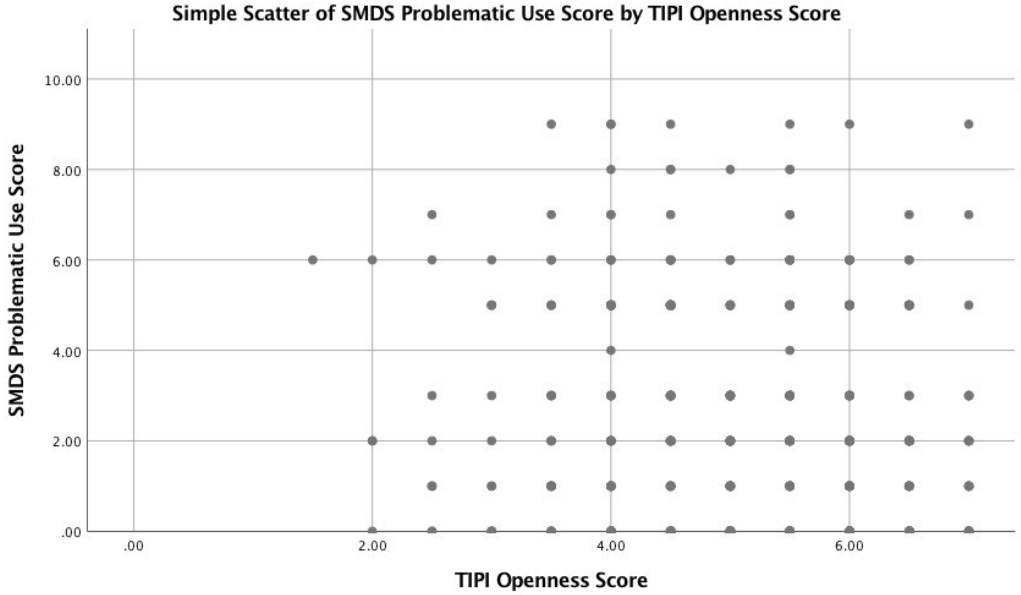

Histogram
for Gender= Female
Mean = 2.27
Std. Dev. = 2.148
N = 353
Frequency
0
20
40
60
80
100
.00
2.00
4.00
6.00
SMDS Problematic Use Score

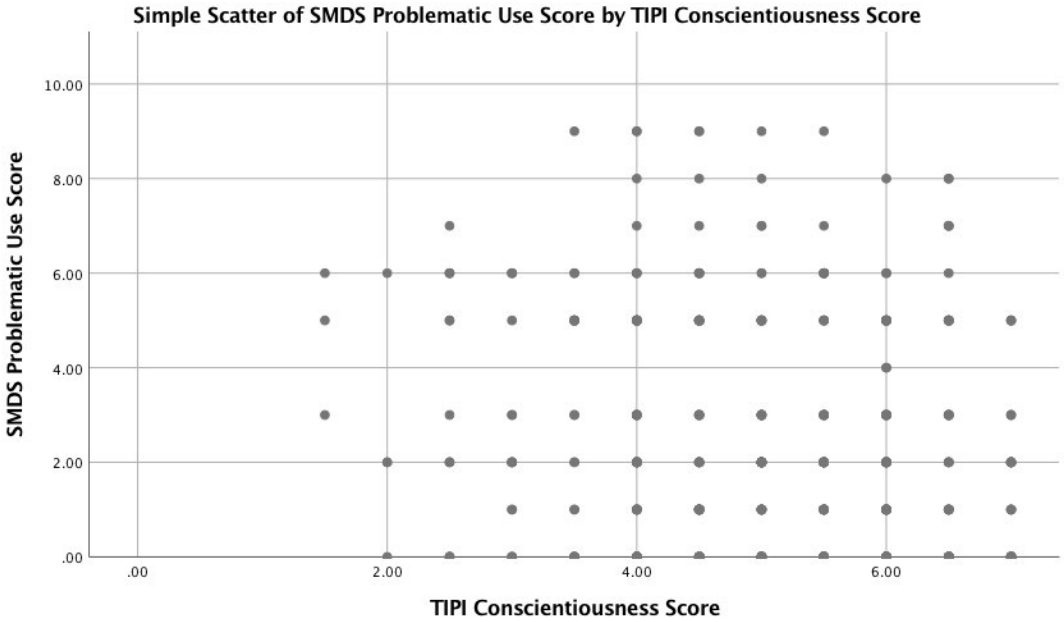

Histogram
Dependent Variable: SMDS Problematic Use Score
Mean = -2.60E-16
Std. Dev. = 0.989
N = 476
Frequency
0
20
40
60
80
-2
0
2
4
Regression Standardized Residual

Appendix K: Scatterplots

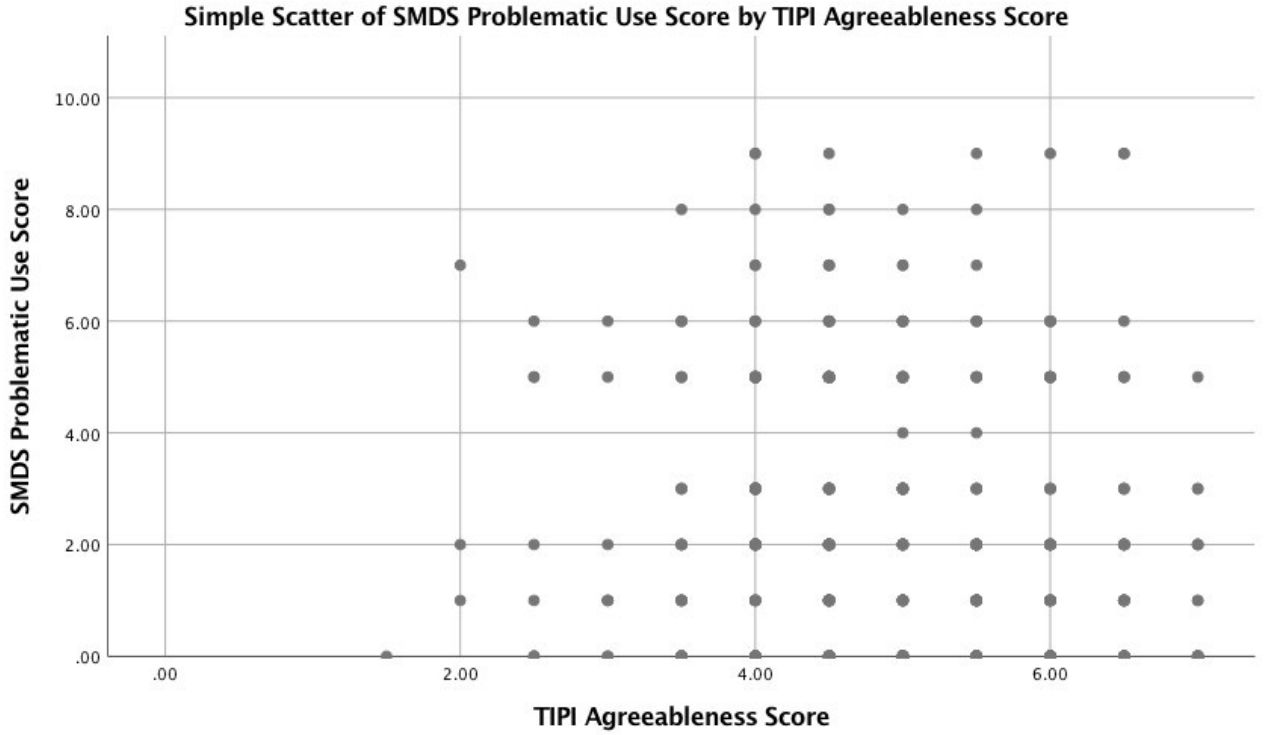


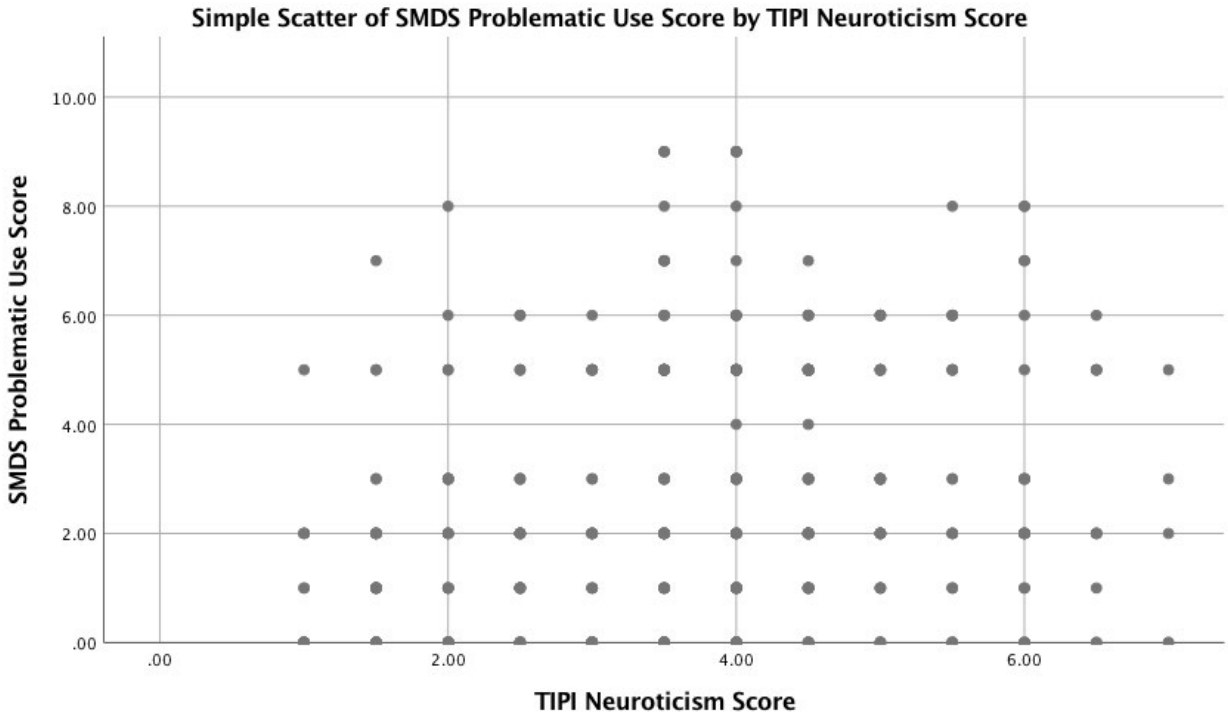


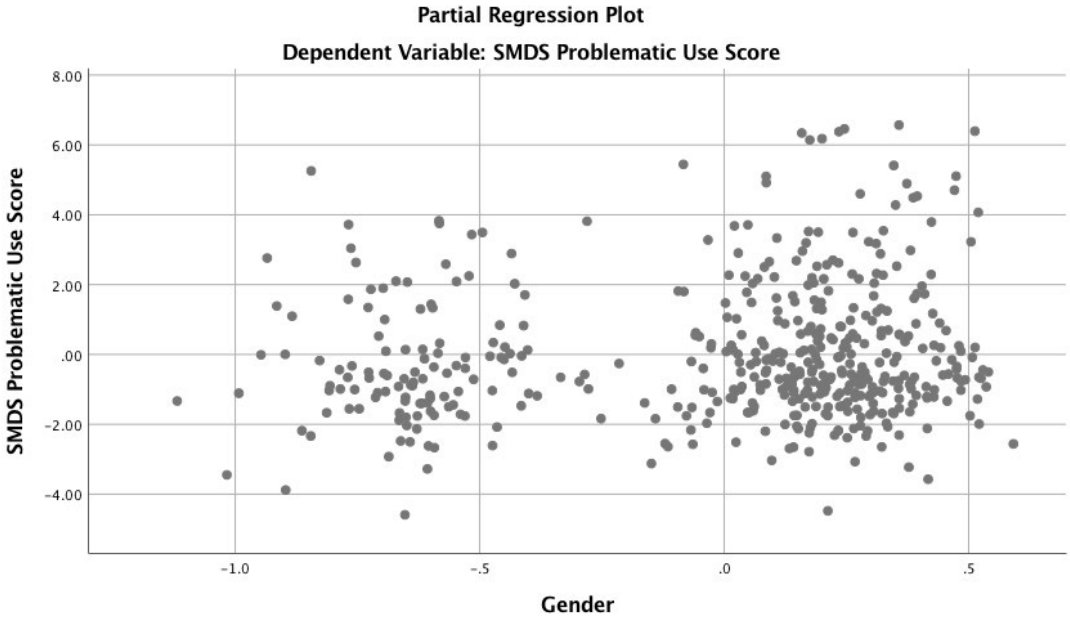

Simple Scatter of SMDS Problematic Use Score by TIPI Openness Score
SMDS Problematic Use Score
10.00
8.00
6.00
4.00
2.00
.00
.00
2.00
4.00
6.00
TIPI Openness Score

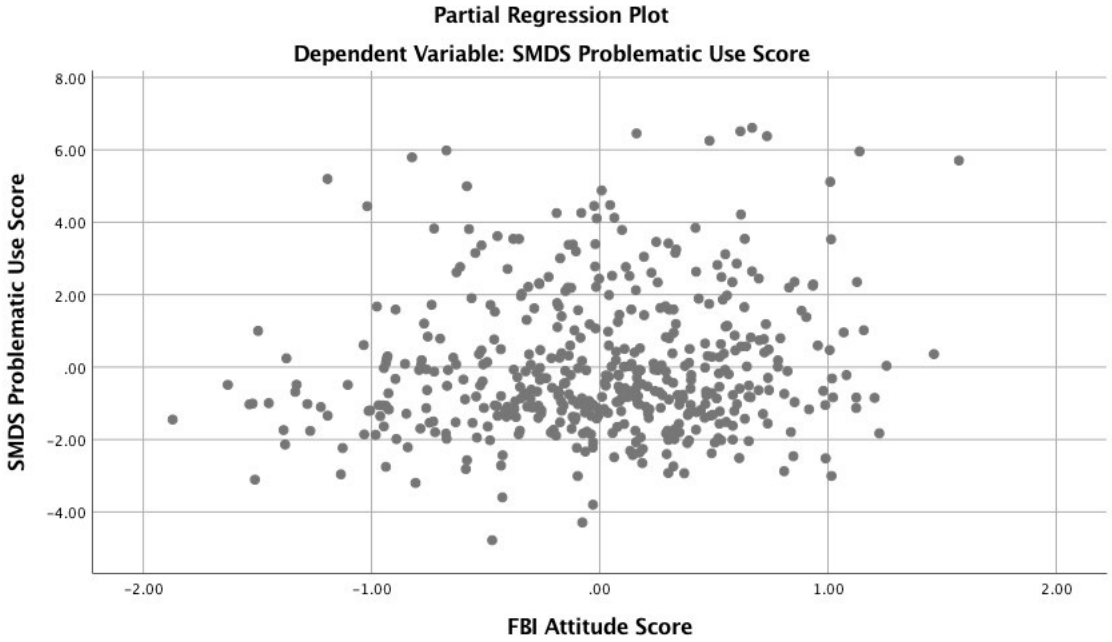

Simple Scatter of SMDS Problematic Use Score by TIPI Conscientiousness Score
SMDS Problematic Use Score
10.00
8.00
6.00
4.00
2.00
.00
.00
2.00
4.00
6.00
TIPI Conscientiousness Score

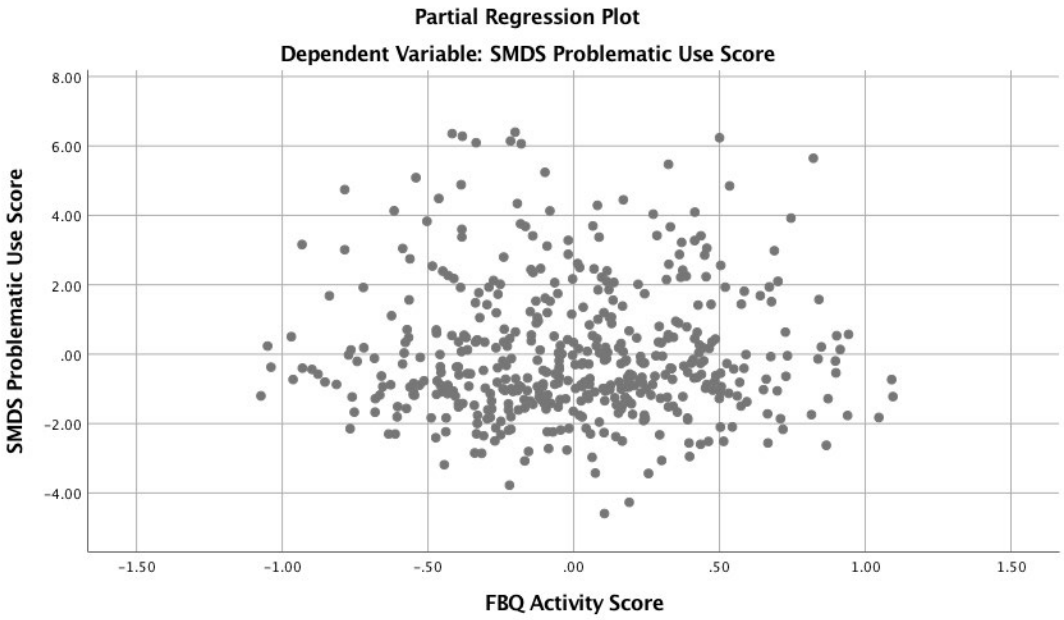
Simple Scatter of SMDS Problematic Use Score by TIPI Extraversion Score
SMDS Problematic Use Score
10.00
8.00
6.00
4.00
2.00
.00
.00
2.00
4.00
6.00
TIPI Extraversion Score

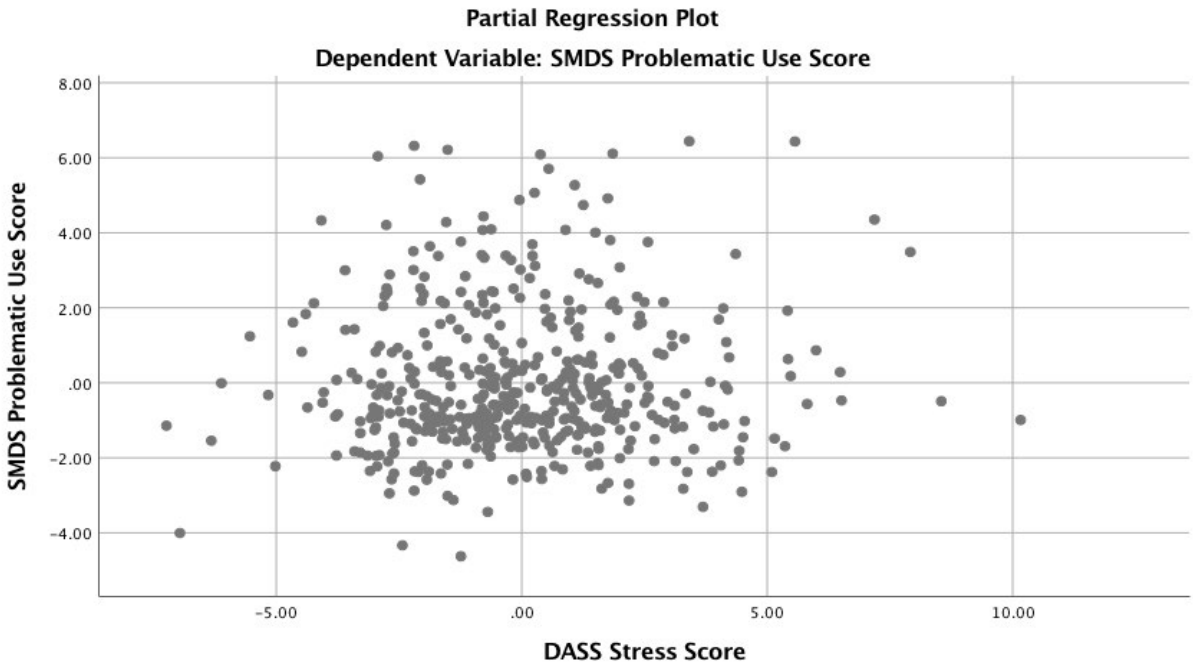

Simple Scatter of SMDS Problematic Use Score by TIPI Agreeableness Score
SMDS Problematic Use Score
10.00
8.00
6.00
4.00
2.00
.00
.00
2.00
4.00
6.00
TIPI Agreeableness Score

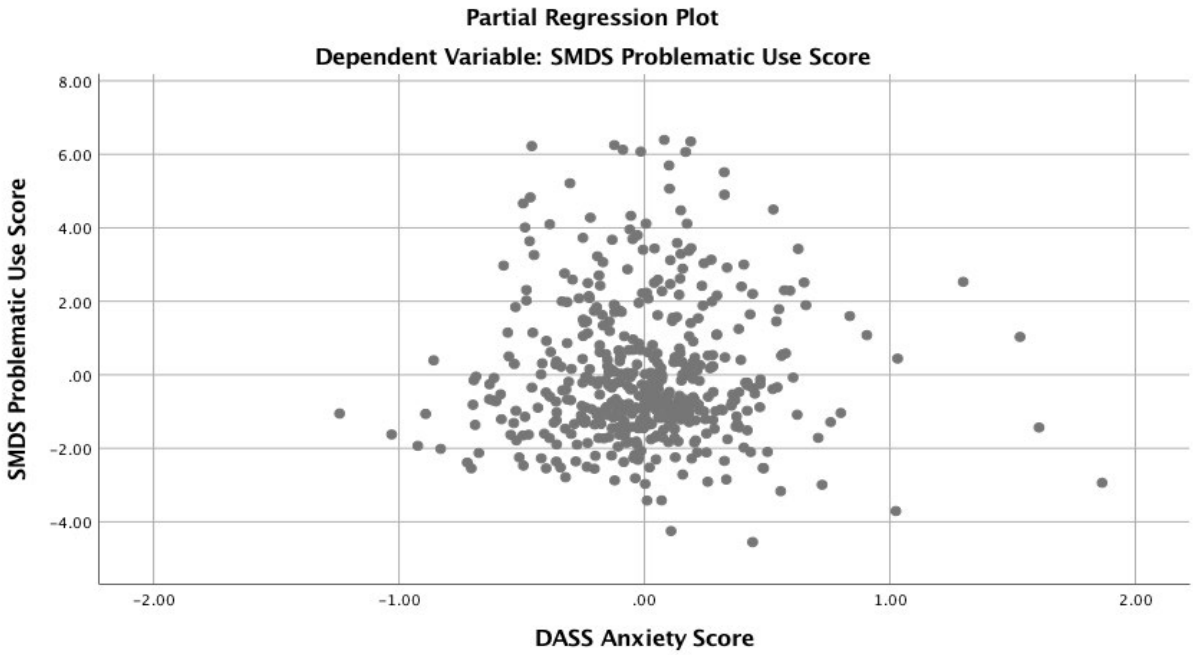

Simple Scatter of SMDS Problematic Use Score by TIPI Neuroticism Score
SMDS Problematic Use Score
10.00
8.00
6.00
4.00
2.00
.00
.00
2.00
4.00
6.00
TIPI Neuroticism Score

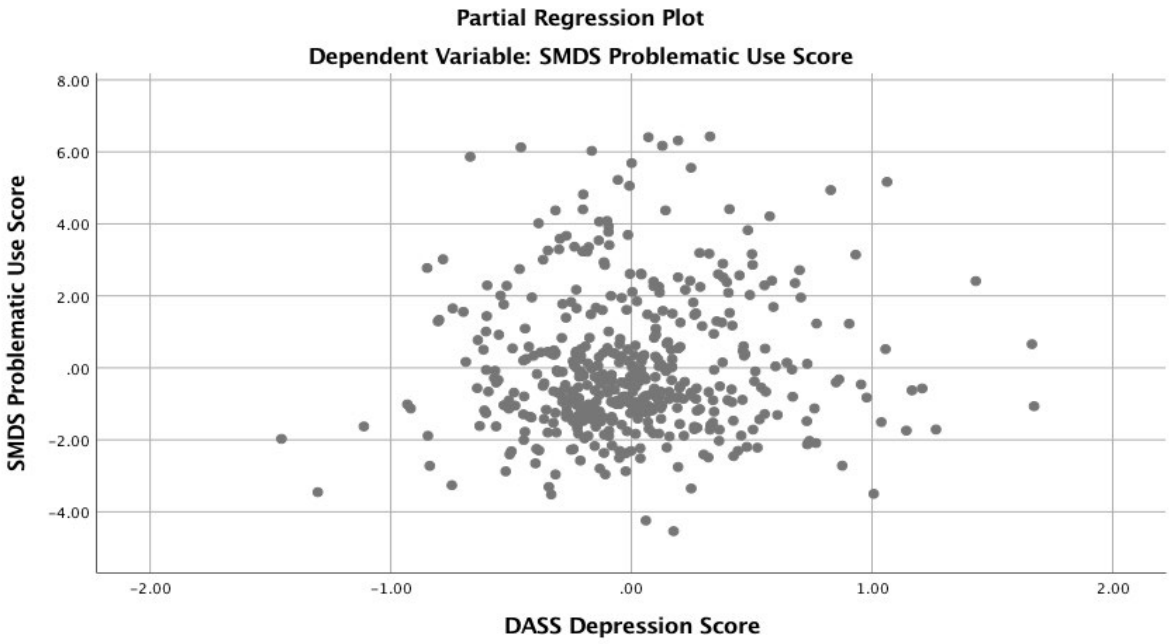

Partial Regression Plot
Dependent Variable: SMDS Problematic Use Score
SMDS Problematic Use Score
8.00
6.00
4.00
2.00
.00
-2.00
-4.00
-1.0
-.5
.0
.5
Gender

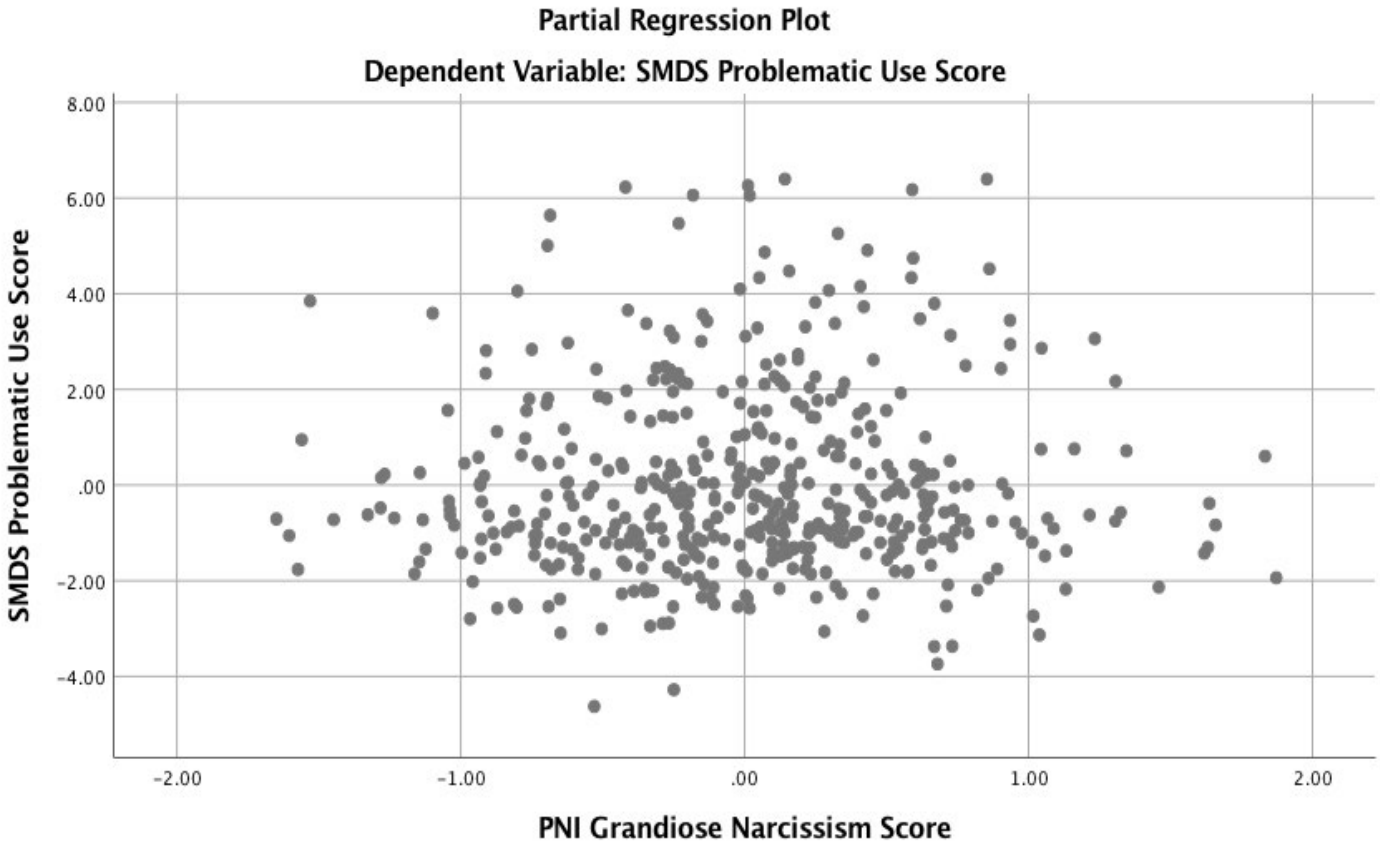

Partial Regression Plot
Dependent Variable: SMDS Problematic Use Score
SMDS Problematic Use Score
8.00
6.00
4.00
2.00
.00
-2.00
-4.00
-2.00
-1.00
.00
1.00
2.00
FBI Attitude Score

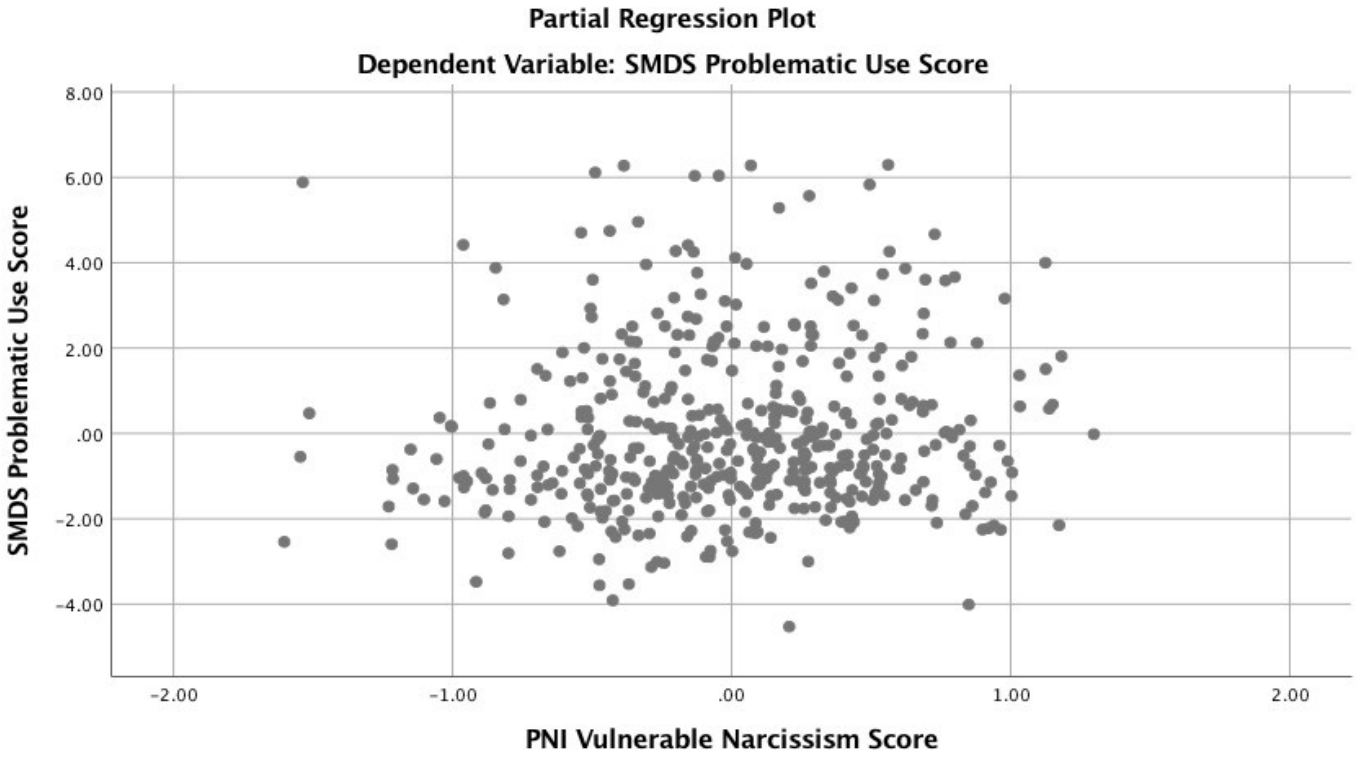

Partial Regression Plot
Dependent Variable: SMDS Problematic Use Score
SMDS Problematic Use Score
8.00
6.00
4.00
2.00
.00
-2.00
-4.00
-1.50
-1.00
-.50
.00
.50
1.00
1.50
FBQ Activity Score

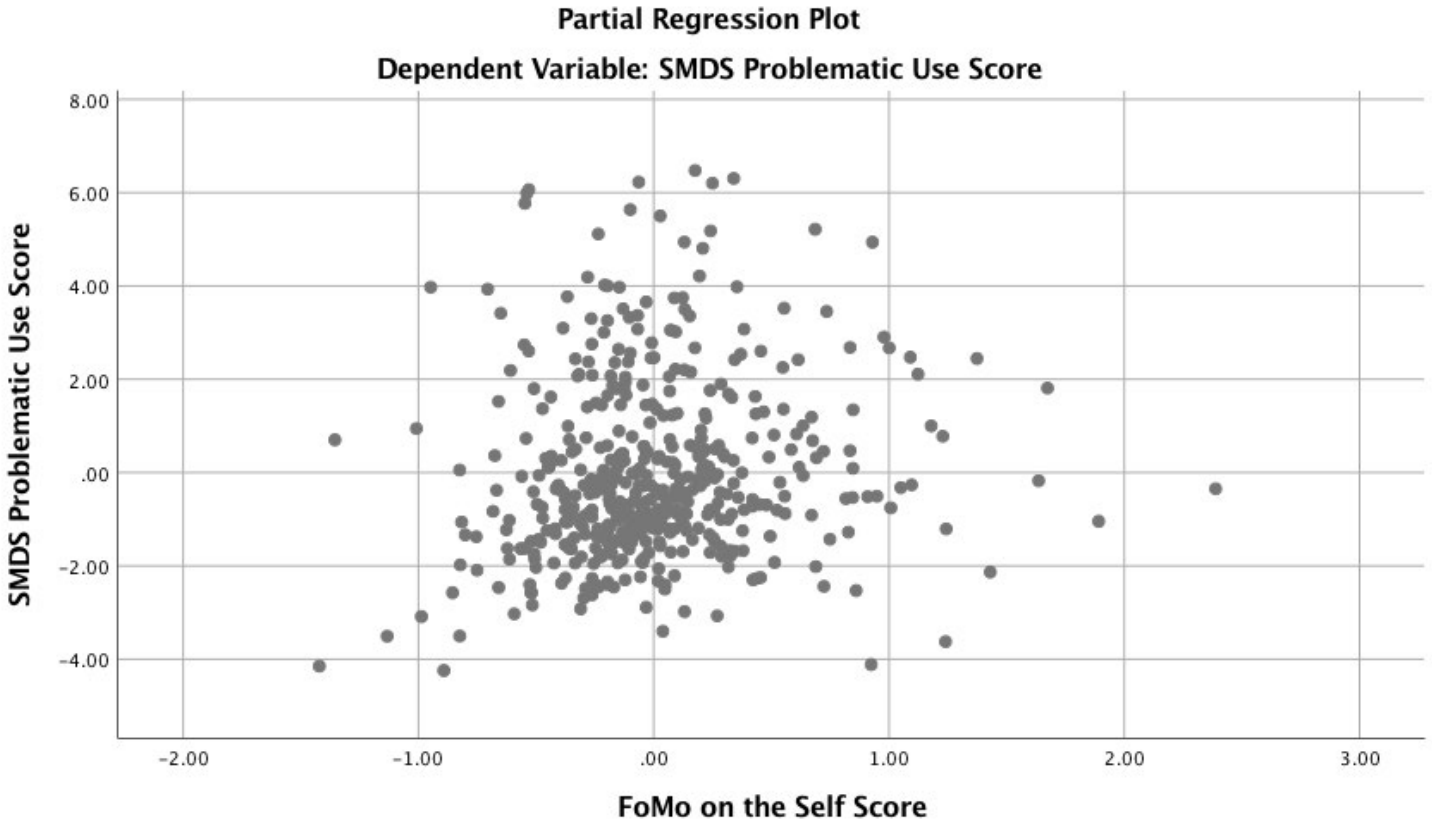

Partial Regression Plot
Dependent Variable: SMDS Problematic Use Score
SMDS Problematic Use Score
8.00
6.00
4.00
2.00
.00
-2.00
-4.00
-5.00
.00
5.00
10.00
DASS Stress Score

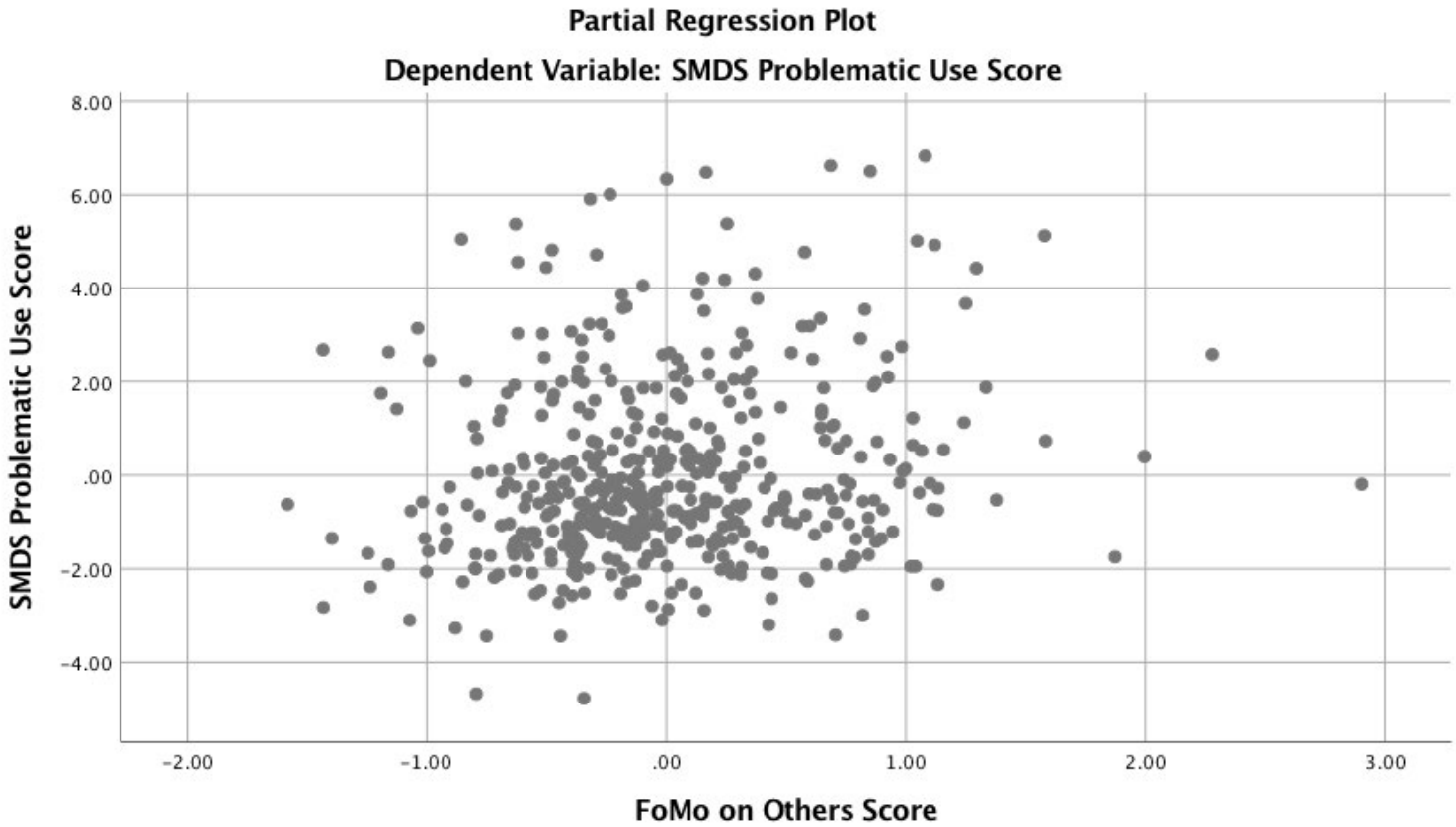

Partial Regression Plot
Dependent Variable: SMDS Problematic Use Score
SMDS Problematic Use Score
8.00
6.00
4.00
2.00
.00
-2.00
-4.00
-2.00
-1.00
.00
1.00
2.00
DASS Anxiety Score


Partial Regression Plot
Dependent Variable: SMDS Problematic Use Score
SMDS Problematic Use Score
8.00
6.00
4.00
2.00
.00
-2.00
-4.00
-2.00
-1.00
.00
1.00
2.00
DASS Depression Score


Partial Regression Plot
Dependent Variable: SMDS Problematic Use Score
SMDS Problematic Use Score
8.00
6.00
4.00
2.00
.00
-2.00
-4.00
-2.00
-1.00
.00
1.00
2.00
PNI Grandiose Narcissism Score


Partial Regression Plot
Dependent Variable: SMDS Problematic Use Score
SMDS Problematic Use Score
8.00
6.00
4.00
2.00
.00
-2.00
-4.00
-2.00
-1.00
.00
1.00
2.00
PNI Vulnerable Narcissism Score


Partial Regression Plot
Dependent Variable: SMDS Problematic Use Score
SMDS Problematic Use Score
8.00
6.00
4.00
2.00
.00
-2.00
-4.00
-2.00
-1.00
.00
1.00
2.00
3.00
FoMo on the Self Score


Partial Regression Plot
Dependent Variable: SMDS Problematic Use Score
SMDS Problematic Use Score
8.00
6.00
4.00
2.00
.00
-2.00
-4.00
-2.00
-1.00
.00
1.00
2.00
3.00
FoMo on Others Score

Appendix L: SPSS Data for Examiner

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
SMDS Problematic Use Score	Male	123	1.7154	1.91423	.17260
	Female	353	2.2691	2.14756	.11430

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
SMDS Problematic Use Score	Equal variances assumed	3.521	.061	-2.530	474	.012	-.55367	.21883	-.98367	-.12368
	Equal variances not assumed			-2.675	236.697	.008	-.55367	.20702	-.96151	-.14584

```
T-TEST GROUPS=Gender(2 1)
  /MISSING=ANALYSIS
  /VARIABLES=ProblematicFBUse_TotalScore
  /CRITERIA=CI(.95).
```

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
FBI Attitude Score	Male	123	3.0428	.83117	.07494
	Female	353	3.3329	.70653	.03760

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
FBI Attitude Score	Equal variances assumed	6.046	.014	-3.741	474	.000	-.29010	.07755	-.44247	-.13772
	Equal variances not assumed			-3.460	187.057	.001	-.29010	.08385	-.45551	-.12468

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
FBQ Activity Score	Male	123	2.9195	.59258	.05343
	Female	353	3.2210	.47955	.02552

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
FBQ Activity Score	Equal variances assumed	5.285	.022	-5.635	474	.000	-.30154	.05351	-.40668	-.19639
	Equal variances not assumed			-5.092	180.770	.000	-.30154	.05921	-.41838	-.18469

Descriptive Statistics

	Mean	Std. Deviation	N
SMDS Problematic Use Score	2.2542	2.28415	476
Gender	1.74	.438	476
FBI Attitude Score	3.2579	.75068	476
FBQ Activity Score	3.1431	.52733	476
DASS Stress Score	6.0231	4.54145	476
DASS Anxiety Score	.5061	.59095	476
DASS Depression Score	.6642	.70117	476
PNI Grandiose Narcissism Score	2.6903	.83169	476
FoMo on the Self Score	1.5426	.61425	476
FoMo on Others Score	1.2105	.83428	476
PNI Vulnerable Narcissism Score	2.2072	.78986	476

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.492[a]	.242	.230	2.00381	.242	21.316	7	468	.000	
2	.540[b]	.292	.278	1.94071	.050	16.464	2	466	.000	
3	.544[c]	.296	.281	1.93672	.004	2.921	1	465	.088	1.996

a. Predictors: (Constant), PNI Grandiose Narcissism Score, Gender, DASS Depression Score, FBI Attitude Score, FBQ Activity Score, DASS Anxiety Score, DASS Stress Score

b. Predictors: (Constant), PNI Grandiose Narcissism Score, Gender, DASS Depression Score, FBI Attitude Score, FBQ Activity Score, DASS Anxiety Score, DASS Stress Score, FoMo on the Self Score, FoMo on Others Score

c. Predictors: (Constant), PNI Grandiose Narcissism Score, Gender, DASS Depression Score, FBI Attitude Score, FBQ Activity Score, DASS Anxiety Score, DASS Stress Score, FoMo on the Self Score, FoMo on Others Score, PNI Vulnerable Narcissism Score

d. Dependent Variable: SMDS Problematic Use Score

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	599.111	7	85.587	21.316	.000[b]
	Residual	1879.131	468	4.015		
	Total	2478.242	475			
2	Regression	723.128	9	80.348	21.333	.000[c]
	Residual	1755.114	466	3.766		
	Total	2478.242	475			
3	Regression	734.085	10	73.409	19.571	.000[d]
	Residual	1744.156	465	3.751		
	Total	2478.242	475			

a. Dependent Variable: SMDS Problematic Use Score

b. Predictors: (Constant), PNI Grandiose Narcissism Score, Gender, DASS Depression Score, FBI Attitude Score, FBQ Activity Score, DASS Anxiety Score, DASS Stress Score

c. Predictors: (Constant), PNI Grandiose Narcissism Score, Gender, DASS Depression Score, FBI Attitude Score, FBQ Activity Score, DASS Anxiety Score, DASS Stress Score, FoMo on the Self Score, FoMo on Others Score

d. Predictors: (Constant), PNI Grandiose Narcissism Score, Gender, DASS Depression Score, FBI Attitude Score, FBQ Activity Score, DASS Anxiety Score, DASS Stress Score, FoMo on the Self Score, FoMo on Others Score, PNI Vulnerable Narcissism Score