Mindfulness in Modernity- A bootstrapped mediation analysis concerning: mindfulness, stressed mood, depressed mood, anxious mood, procrastination and social media reliance

Thomas Emmet Reck

Student number: 13541717

BA (Hons) Psychology

NCI **2016**

Abstract

The current study is concerned with assessing the interactions between mindfulness, mood, procrastination and social media reliance. A sample of 135 individuals completed an online questionnaire that included measures for mindfulness, procrastination, social media reliance, depressed mood, anxious mood and stressed mood. Pearson correlation and bootstrapped mediation results confirmed positive associations between depressed mood, anxious mood, stressed mood, procrastination and social media reliance, which is consistent with prior findings. Additionally, and also consistent with prior research, analysis results indicated that mindfulness was negatively associated with procrastination. Contradictory to prior findings, mindfulness was not negatively associated with depressed mood, anxious mood, stressed mood or social media reliance. Mindfulness did not mediate the relationships between depressed/anxious/stressed mood and procrastination/social media reliance.

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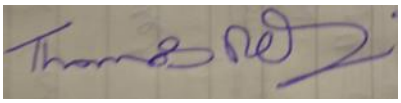

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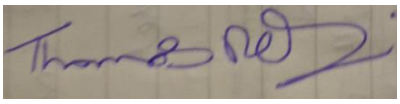

Date: 1/4/2016

Acknowledgements

I would like to firstly thank all of the participants who took part in this study. Additionally I would like to extend thanks to all of NCI's psychology course staff, with a special thanks to Dr Rebecca Maguire, Dr Philip Hyland and Niall McGowan, for their help and guidance throughout completing my thesis. Last but my no means least, I would like to thank my supervisor Nigel Vahey for helping me turn my scattered ideas into real testable aims and hypotheses, and also for deciphering my ambiguous, panicked emails then replying with excellent guidance and solutions.

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Introduction

Aims and hypotheses

The current study is concerned with assessing the interactions between mindfulness, mood, procrastination and social media reliance. Specifically the study variables of interest are broken into three main categories; 1 mood (stressed mood, depressed mood and anxious mood), 2 mindfulness (mindfulness) and 3 behaviour and reliance (procrastination and social media reliance). Using the categorisation of the study variables, the current study has five main empirically supported hypotheses and one unsupported aim.

Hypotheses:

1. All mood variables will be positivity associated with each other
2. Mindfulness will be negatively associated with the mood variables
3. Both behaviour and reliance variables will be positively associated with each other
4. Mindfulness will be negatively associated with the behaviour and reliance variables
5. Both behaviour and reliance variables will be positively associated with the mood variables

Aim:

1. Mindfulness will mediate the relationship between the mood variables and the behaviour and reliance variables

What is Mindfulness?

The word *mindfulness* comes from the Pali word *sati*, meaning to have awareness and attention whilst remembering (Bodhi, 2000). Mindfulness has been referred to as; a psychological state of complete awareness, a practice that promotes such awareness, a method of information processing and a character based trait (Brown, Ryan & Creswell, 2007; Germer, Siegel & Fulton, 2005; Kotanski & Hassed, 2008; Siegel, 2007). Mindfulness research of late has become entangled in a debate of whether mindfulness should be viewed as a state which is enhanced by

practices such as meditation, or a natural character trait which some individuals have or don't have to a particular degree (Utahedu, 2016). For the purpose of the present study, research will be presented which underlines mindfulness as both a state and trait, meaning mindfulness may be a state of awareness and acceptance cultivated by meditation practices, however some individuals may display moment by moment awareness naturally as a trait without prior mindfulness and/or meditation training. Such viewing of mindfulness is merited from prior research findings (Germer et al, 2005; Brown et al, 2007; Kiken, Garland & Bluth, 2015). It is important to note that for practicality in an undergraduate thesis, mindfulness will be measured as a trait only in the current study.

Mindfulness and mood

Mindfulness has become a hot topic of research throughout the past ten to fifteen years. Perhaps owing its surge in popularity to mindfulness based stress reduction programmes (MBSR) as well as acceptance and commitment therapy. Mindfulness has shifted from a selectively Buddhist practice to a psychological concept (Didonna, 2009; Shapiro & Carlson, 2009). This increase in popularity has led to the discovery of many empirically supported benefits of mindfulness.

One such benefit of mindfulness is its perceived negative relationship with depressed, anxious and stressed moods, and aspects of/and relating to, such moods (Hoffman, Sawyer & Witt, 2010). The current study hypothesizes that in accordance with literature, mindfulness will be negatively associated with stressed, depressed, and anxious moods. Additionally the current study hypothesizes that all mood variables will be positively associated with each other, adding to the findings of a recent study, which suggested that it is rare for stressed, anxious and depressed moods to occur individually. Meaning that a person with a highly stressed or anxious mood is highly likely to also experience a depressed mood, or vice versa (Jihan, Ruth & Terry, 2012).

The theorized reason for why mindfulness produces beneficial outcomes in relation to emotion and mood, is that mindfulness practice enhances metacognitive awareness and decreases rumination by allowing an individual to step away from repetitive cognitive processing, whilst also making gains in attention through increased working memory. Thus improving emotion

regulation (Corcoran, Farb & Anderson, 2010). Research appears to support Corcoran et al.'s model, with findings suggesting that mindfulness is negatively related to rumination and enhanced emotion regulation capabilities (Chambers, Lo & Allen, 2008; McKim, 2008; Ramel, Goldin, Carmona, & McQuaid, 2004). In Chambers et al.'s (2008) study, 20 participants with little or no meditation experience took part in intensive 10 day mindfulness meditation training. Prior to the training taking place the meditation group where compared to a waist lined control group on mindfulness, rumination, attentional capabilities and mood. Following the retreat, the meditation group recorded higher self-reported mindfulness, decreased rumination, decreased feelings of anxiety, stress, and depression compared to the control group (Chambers et al., 2008). Although findings from Chambers et al.'s (2008) study are significant in relation to the current study by supporting the second hypothesis, they are also limited, due to the small sample size and unclear way in which the methods are outlined. Meaning it is unclear to the reader if the meditators scores where only compared to the control groups scores post-trial or in addition to a comparative been drawn from their own scores prior to the retreat.

The results from Chambers et al.'s (2008) study which suggest mindfulness training is associated with decreased rumination and decreased negative mood, are consistent with Ramel et al.'s (2004) findings in a study involving participants who had a chronic mood disorder. During Ramel et al.'s (2004) study, participants took part in an 8 week MBSR programme. Post MBSR training, scores on rumination, depressed, anxious and stressed mood among the test group decreased compared with their scores prior to the programme, and compared to scores of a control group matched on age, gender and depressed mood and factors associated to mood such as rumination. Additionally, the amount of time spent meditating, significantly predicted participants level of negative mood. In a similar study McKim et al (2008), compared pre and post scores of self-reported mindfulness, stressed, anxious and depressed moods, of participants who took part in an 8 week MBSR programme. The sample group where selected as they reported experiencing ongoing negative moods. Following the MBSR intervention, the participants recorded significantly higher scores on self-reported mindfulness and significantly lower scores on depressed, anxious and stressed mood. In addition mindfulness scores were found to significantly predict depressed and anxious mood. Ramel et al. (2004) & McKim et al.'s (2008) studies offer support to the second hypothesis of the current study by suggesting that mindfulness may be negatively associated to a stressed, anxious and depressed mood, whilst also

suggesting that degree of mindfulness meditation may dictate levels of a such moods. Additionally these studies present mindfulness as a significant predictor for mood. Both studies gain particular strength due to their specialist samples.

In a recent meta-analytic study, 39 studies where analyzed in an attempt to determine the effectiveness of mindfulness based therapy in reducing a depressed, anxious and stressed mood (Hoffman, et al. 2010). Across the 39 studies, mindfulness based therapy was found to be an effective method of improving mood, with moderate to strong effect sizes. Hoffman et al (2010) noted that mindfulness based therapies had the potential to significantly reduce a depressed, anxious and stressed mood and even possibly eradicate various clinical issues. The findings from Hoffman et al.'s (2010) meta-analysis are consistent with literature which suggests mindfulness meditation leads to a decreased negative mood (Davidson, Kabat-zinn & Schumacher, 2003; Farb, Anderson & Mayberg, 2010; Way, Creswell & Eisenberger, 2010).

In Farb et al.'s (2010) study, two groups of participants were gathered, a test group and a control group. Both groups' levels of self-reported depressed, anxious and stressed mood along with neural reactivity measured by functional magnetic resonance imaging (fMRI), after watching an upsetting movie, were recorded. The test group then underwent an 8 week MBSR programme. After the programme both groups watched a similarly upsetting movie once again and their levels of negative mood and neural reactivity where measured afterwards. The test groups self-reported depressed, anxious and stressed mood post intervention was significantly lower than pre intervention, there was no significant change within the control group. Additionally the test group alone displayed greatly different neural responses post intervention. Farb et al.'s (2010) findings from the study perhaps indicated that individuals who are exposed to mindfulness training have exclusively different emotional responses than an unexposed individual. Additionally Farb et al.'s (2010) study presents significant relationships between mood, mindfulness and neural activity. With the relationship between mindfulness and mood being particularly significant to the current study hypothesis.

In a similar study Way et al. (2010) assessed the relationships between mindfulness, depressed, anxious and stressed mood with neural activity, this time measured by activity exclusively in the amygdala. In Way et al.'s (2010) study mindfulness was measured solely as a trait with no interventions. Higher depressed mood was found to be significantly associated with increased

amygdala activity. Additionally, mindfulness was once again found to be negatively associated with depressed, anxious and stressed mood supporting hypothesis two. Way et al.'s (2010) study offers further evidence of the relationships between mindfulness, mood and neural activity, with particular significance to the current study owing to mindfulness being measured exclusively as a trait.

In conclusion the presented literature appears to support the first hypothesis of the current study, being that mindfulness will be negatively associated to depressed, anxious and stressed mood. The mindfulness and mood literature as a whole presents much important information about the relationship between mindfulness and mood, but tells little about the potential mediating role mindfulness could play between depressed mood and various behaviours. The current study aims to assess this potential mediating role.

Procrastination and social media reliance

The third variable of interest in the current study is procrastination. Procrastination is understood to be irrationally and voluntarily delaying to carry out an important task in favour of carrying out less important tasks, despite knowing such actions may have negative implications (Wilson, 2012). Suggested reasons for why people procrastinate vary, it was once thought that people procrastinated due to the makeup of their personality as categorized by the big five (Schouwenburg & Lay, 1995). However this idea has been disregarded as dated by more recent research which suggests that people procrastinate due to them viewing more important tasks to be too difficult to begin and they find it challenging to formalize methods of tackling such tasks. Such behaviour results in an individual engaging in less important, perhaps even menial tasks. These findings suggest that anyone is vulnerable to procrastination, regardless of personality (Dewitt & Schouwenburg, 2002; Ferrari, Mason & Hammer, 2006; Wilson, 2012). Although procrastination is by no means a new behaviour, a recent study which founded and demonstrated a new phenomenon known as *Bedtime Procrastination*, outlined that modern technologies and societal norms have increased procrastination behaviour and developed what it means to procrastinate (Kroese, De ridder & Evers, 2014).

One such modern technology which has been found to be associated with procrastination (Huntnewsnucom, 2014) and is the fourth variable of interest in the current study is, social media. Recent statistics gathered from a sample of 2003 American adults, displays clearly how prominent social media is in modern society. Duggan, Ellison and Lampe's (2015) report estimates that 74% of people have a social media account which they use regularly. These figures appear to be increasing steadily, as they were 67% in 2012. Of the 74% the large majority have Facebook accounts (71%) with use of other sites such as LinkedIn, Pinterest, Twitter and Instagram making up 23% - 28%. Additionally, 56% of the individuals aged 65 or older had a social media account which they used regularly. These statistics demonstrate how social media has become part of a large majority of people's lives, across all age groups.

As mentioned an association has been found between social media and procrastination (Huntnewsnucom, 2014). These findings support the third hypothesis of the current study, being that social media reliance and procrastination will be highly correlated. However, there is very little evidence in the literature to support this hypothesis. A leader in the field of procrastination *Timothy A Pychyl Ph.D.* is currently conducting a number of studies relating to procrastination and social media, none of which have yet been finalized and published. Nonetheless Pychyl, (2013) has outlined that from initial analysis, it is clear that there is a strong relationship between procrastination and social media. A recent study carried out in America by founders of a mobile phone app *stop procrastination,* demonstrated the relationship between social media and procrastination. The mobile phone app is designed to monitor the online activity of users when activated, whilst also allowing users to comment on why they use certain online medium. Of the 1500 users involved in the study, 74% of them outlined that their social media use was almost always as a result of procrastination. Additionally, data taken from the users mobile phones confirmed social media as the most common use of internet time (Huntnewsnucom, 2014). The findings from this study, although methodologically limited offer some support for the third hypothesis of the current study.

In conclusion, procrastination and social media reliance have been found to be prominent behaviours, perhaps becoming increasingly prominent behaviours due to technological advances (Wilson 2012; Duggan et al. 2015; Kroese et al. 2014). There is some evidence to support the third hypothesis of the current study, that social media reliance and procrastination will be highly

correlated, with some findings suggesting that increased engagement in social media in recent years has allowed procrastination to develop, leading to a new phenomenon of social media procrastination, however existing support is limited in quantity and quality (Pychyl, 2013; Huntnewsnucom, 2014). Such a lack of research in the area of social media and procrastination offers merit to the current study, leaving a clear gap in the literature, perhaps finding that in modern society social media and procrastination are so highly correlated that they prove Pychyl et al.'s (2013) theory of social media procrastination.

Mindfulness with procrastination and social media reliance

The fourth hypothesis of the current study, is that mindfulness will be negatively associated with procrastination. Existing literature relating to this hypothesis is limited in number, however in the studies found there appears to be a clear negative association between mindfulness and procrastination (Pychyl, & Rotblatt, 2007; Flett, & Pychyl, 2014; Sirois, & Tosti, 2012). Pychyl et al. (2007) began to explore the link between mindfulness and procrastination, with a short paper which assessed the effectiveness of a brief mindfulness intervention for academic procrastination. The mindfulness intervention was effective in reducing procrastination scores, however the study is limited due to its specialized sample of undergraduate psychology students and small sample size. Flett et al. (2014) built upon Pychyl et al.'s (2007) work, by assessing the relationship between mindfulness and procrastination, using a sample of individuals with a broader demographic. Once again mindfulness and procrastination were found to be negatively associated.

The work of Sirois, et al. (2012) perhaps presents the best evidence of a negative relationship between mindfulness and procrastination. Sirois et al. (2012) measured trait mindfulness in 339 Canadian participants, and firstly assessed the relationship between mindfulness and procrastination, finding them to be highly negatively correlated. Additionally Sirois et al. (2012) conducted mediation analysis, finding mindfulness to be a successful mediator for the relationship found between procrastination and poor psychological well-being. Sirois et al.'s study offers particular merit to the current study due to its adequate sample size and detailed methods of data analysis. However the study's sample was largely female dominated (81%) perhaps limiting its implications, but offering room for improvement in the current study.

The presented studies have demonstrated evidence for a negative association, between mindfulness and procrastination, which in turn offers support for Pychyl's (2013) theory on mindfulness and procrastination, which states that procrastination results from the *flight* response to difficult tasks, as a result of poor emotion regulation. Pychyl (2013) suggests that, mindfulness and procrastination are polarized in relation to their associations with emotional awareness, awareness of the present moment and emotional responses. In short Pychyl's (2013) theory suggest that procrastination and mindfulness are complete opposites and cannot co-exist. Corcoran et al.'s (2010) supported model of mindfulness and emotion regulation mentioned previously, further supports Pychyl's (2013) theory, by suggesting that mindfulness comes as a result of optimal emotional regulation.

Carrying on, the fourth hypothesis, also states that mindfulness scores will be negatively correlated with social media reliance scores. There is little research exploring the direct relationship between social media reliance and mindfulness, however related research does exist. As stated previously in Duggan et al.'s (2015) report on social media use, it appears that social media use is at an all-time high and is steadily increasing annually. Some research has suggested that such a vast increase in social media use points towards a large majority of modern societies, to some degree, being addicted to social media (Griffiths, 2013; Kuss & Griffiths, 2011). Both Griffiths (2013) and Kuss et al. (2011) conducted large review studies, which aimed to assess whether excessive social media use should be viewed as an addiction. They determined addiction based upon leading cognitive-behavioral and sociological models along with clinical diagnosis. Both reviews declared mixed findings, with support for and against social media use as an addiction.

Shonina, Van Gordona & Griffiths (2014) built upon the work of Kuss et al. (2011) and Griffiths (2013) by suggesting that even if social media use is not viewed exclusively as an addiction, individuals who spend excessive amounts of time using social media may be viewed as having a minimal reliance upon social media at least, if not an addiction. Shonina et al. (2014) suggested that when social media use is viewed as a reliance, perhaps inferences may be drawn from studies which assess mindfulness as an effective method of reducing reliant and addictive behaviours. Shonina, Van Gordona & Griffiths (2014) built upon their own prior work, by assessing mindfulness as an effective method of reducing reliant and addictive behaviours. The

study was centered on a limited sample of individuals, some of which were said to be minimally reliant on gambling and others bordering upon and being deemed as addicted to gambling. Shonina et al.'s (2014) study assessed the effectiveness of a mindfulness intervention for the gambling dependent individuals, through individual case studies and broader samples. In both instances, a mindfulness intervention was successful in reducing the amount of gambling behaviour, equally across both reliant and addicted individuals. Shonina et al.'s study offers cautionary justification for the fourth hypothesis of the current study, offering mindfulness as an effective method of reducing reliance behaviours, however due to the specialized sample, inferences are limited. Conversely, use of a specialized sample offers an opportunity for the current study to test the findings in a broader sample.

In conclusion, evidence although limited, was found in support of the third hypothesis. The literature presented appears to suggest that, mindfulness is negatively associated with procrastination (Pychyl, et al. 2007; Flett, et al. 2014; Sirois, et al. 2012). Additionally the presented literature suggests that a recent incline in social media use has led to large proportions of modern societies being, to some degree reliant on social media (Griffiths, 2013; Kuss, et al. 2011). Such a behavioral reliance has been found to be reduced by mindfulness based interventions (Shonina, et al. 2014), perhaps offering further support for the third hypothesis of the current study, that social media reliance will be negatively associated with mindfulness. Although inferences drawn from the suggested studies relating to social media reliance and mindfulness may be stretched, if Pychyl's (2012) theory of social media procrastination mentioned previously, is supported in initial analysis, then it may be said that studies assessing the relationship between mindfulness and procrastination offer additional support to the third hypothesis.

Mood with procrastination and social media reliance

The following final section will present and review literature relating to the fifth hypothesis of the current study, being depressed, anxious and stressed mood scores will correlate with higher scores of procrastination and social media reliance. A relationship between mood and procrastination was first found accidently in a study which largely aimed to assess the relationship between perfectionism and psychological health (Antony, Purdon & Huta, 1998).

Antony et al.'s (1998) study included procrastination, depressed, anxious and stressed moods as subset variables, using a sample of individuals who were clinically diagnosed as suffering from a psychological disorder. The study found negative mood to be highly correlated with procrastination, which offers support for the fifth hypothesis of the current study, however this research is somewhat dated and uses a sample which is vastly different than in the current study. Stober & Joormann (2001) built upon previous work by testing the relationship between procrastination and mood in a non-clinical sample. Procrastination and depressed, anxious and stressed mood were found to be positively correlated, although the sample used again limits implications for the current study, as it consisted solely of college students.

A meta-analysis focusing on studies relating to procrastination, mood and personality may offer additional support for the fifth hypothesis (Van Eerde, 2003). Of the 121 studies reviewed in Van Eerde's (2003) analysis, 13 were found which directly assessed the relationship between procrastination and negative mood. Van Eerde concluded that it was clear from the literature, that procrastination was correlated with depressed, anxious and stressed mood, supporting the fifth hypothesis. However the time when the presented literature was published limits inferences drawn. More recent work perhaps strengthens the association between procrastination and depressed mood, and heightens justification for the current study. Flett (2012) assessed the relationship between self-reported depressed, anxious and stressed mood and procrastination among undergraduate students. Procrastination, stressed, anxious and depressed mood were found to be highly correlated, that said the limited sample is again an issue, nonetheless this study offers support for previous findings in a modern setting.

With social media reliance and mood research, date of publication does not appear to be an issue. Research to date relating to social media use and its impact on mood and psychological well-being has come up with mixed findings with some studies suggesting that social media use has positive effects such as on self-image, perceived health and relationship attitudes (Toma & Hancock, 2012; Kim & Lee, 2011). Whereas contradictory studies are finding that social media use may have largely negative impacts on psychological health (Moreno, Jelenchick, Egan, et al. 2011; Morrison & Gore, 2010; Chou & Edge, 2012; Steers, Wickham & Acitelli, 2014). Moreno et al. (2011) began to look at the relationship between mood and social media use by monitoring the dialogue uploaded by 200 college students in their Facebook statuses over a period of a year.

The study found that 25% of the students uploaded statuses which reflected a depressed mood. Morrison et al.'s (2010) study then suggested that perhaps increased use of social media would be associated with an increased negative mood.

Chou et al. (2012) and Wickham et al. (2014) conducted studies which aimed to test Morrison et al.'s (2010) findings in varying samples and methodologies. Chou et al. (2012) assessed the relationship between self-reported social media use and mood among a convenient sample of 425 Facebook users. The study findings suggested that individuals who used social media more, scored higher on depressed, anxious and stressed mood. Wickham et al. (2014) built upon this by measuring social media use, depressed, anxious and stressed mood through self-reports in a sample of 180 college students. In addition to self-report, the study electronically monitored social media use to determine degree of use, whilst also instructing participants to complete diary entries to gauge their mood. In both trials an increase in depressed, anxious and stressed mood was associated with increased social media use. The presented literature appears to suggest that social media may have been found to be associated with some positive aspects of mood and psychological health, but research into the direct relationship between mood and social media use suggests that an increased reliance upon social media is associated with an increased depressed, anxious and stressed mood. Thus supporting the fifth hypothesis of the current study.

In conclusion presented literature seems to support the fifth hypothesis of the current study. Research suggests that an individual who frequently engages in procrastination behaviour, may score highly on depressed, anxious and stressed mood (Antony, et al. 1998; Stober, et al. 2001; Van Eerde, 2003; Flett, 2012). However, much of the research in the area is limited with regard to publication date and sample demographics, leaving a clear gap in the literature for a modern study with a broad sample assessing the relationship between procrastination and mood. Perhaps the current study could fill this gap. Literature relating to the second part of the fifth hypothesis appears to be heavily stacked in favour of increased social media reliance being associated with increased depressed, anxious and stressed mood, across various samples and methods (Moreno, et al. 2011; Morrison, et al. 2010; Chou, et al. 2012; Steers, et al. 2014). The current study offers an opportunity to test if prior findings will be replicated in an Irish sample.

Methods

Participants and procedure

Participants were a convenient sample of 136 individuals recruited by means of a social media post and via email. The sample consisted of 56 males and 80 females. Participant's age ranged from 18-74 with a mean age of 30 (SD = 14).

Materials

Participants gained information about the study and completed scales via an online form. Once participants read a brief description of the study and agreed to take part, they answered two questions relating to their demographic: age and gender. Participants then completed questionnaires for procrastination, social media reliance, mindfulness and depression, anxiety & stress.

Pure Procrastination Scale-

Steel's (2010) pure procrastination scale, is a 12 item scale that measures individuals tendencies towards procrastination. Respondents rate their agreement with items on a 5 point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate an individual's increased likelihood to procrastinate. The pure procrastination scale displayed good internal reliability ($\chi = 0.90$). ***See Appendices***

Five Facet Mindfulness Questionnaire Short Form (FFMQSF)-

Bohlmeijer, ten Klooster, Fledderus, et al.'s (2011) FFMQSF, is a 24 item scale with 12 reverse coded items, which assesses individual's levels of mindfulness. The scale is broken down into five facets of mindfulness: (1) non react, (2) observe, (3) act aware, (4) describe and (5) non judge. Respondents rate on a 5 point Likert scale how much listed statements applied to them over the past month ranging from 1 (never) to 5 (always). Higher scores indicate respondent's higher level of mindfulness. Internal reliability for all individual facets alone was not strong however was good for the FFMQSF as a whole ($\chi = 0.74$). For this reason mindfulness is measured as a whole rather than in five separate facets. ***See Appendices***

DASS 21-

The DASS 21 (Henry & Crawford, 2005) is a 21 item scale used to measure feelings and experiences associated with depression, anxiety and stress. The scale is split into 3 subscales (1) depression, (2) anxiety and (3) stress, each containing 7 items. Originally participants completing the DASS rated how often they have experienced feelings or events listed in 21 statements in the past week on a 4 point Likert scale ranging from 1 (never) to 4 (almost always). However to keep participants instructions consistent, in the current study responses were recorded on a 5 point Likert scale ranging from 1 (never) to 5 (almost always). The addition of an extra point on the Likert scale resulted in higher internal reliability for depression ($\chi = 0.92$), stress ($\chi = 0.84$), anxiety ($\chi = 0.84$) and scale total ($\chi = 0.94$) compared with Henry et al.'s (2005) scores. Higher scores indicate higher levels of depressed, anxious and stressed mood. ***See Appendices***

Social Media Use Integration Scale-

Jenkins-Guarnieri, Wright, & Johnson's (2013) social media use integration scale, is a 10 item scale with 1 reverse coded item. It measures behaviours associated with social media use and reliance upon social media. Jenkins-Guarnieri et al.'s (2013) scale originally measures participant's responses to listed statements on a 6 point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). In the current study, in keeping with the instructions for other scales in the study respondents rated their agreement with listed statements on a 5 point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). High scores indicate higher levels of social media reliance. Internal reliability was strong ($\chi = 0.86$). ***See Appendices***

Design

The current study is a cross sectional, quantitative undergraduate thesis with 6 variables of interest: depressed mood, anxious mood, stressed mood, mindfulness, procrastination and social media reliance. The current study is concerned with assessing correlations between the study variables using a Pearson correlation coefficient whilst also testing particular variables mediating roles using bootstrapping. Roles of particular variables in mediation models can be seen in figure 1.

Figure 1:

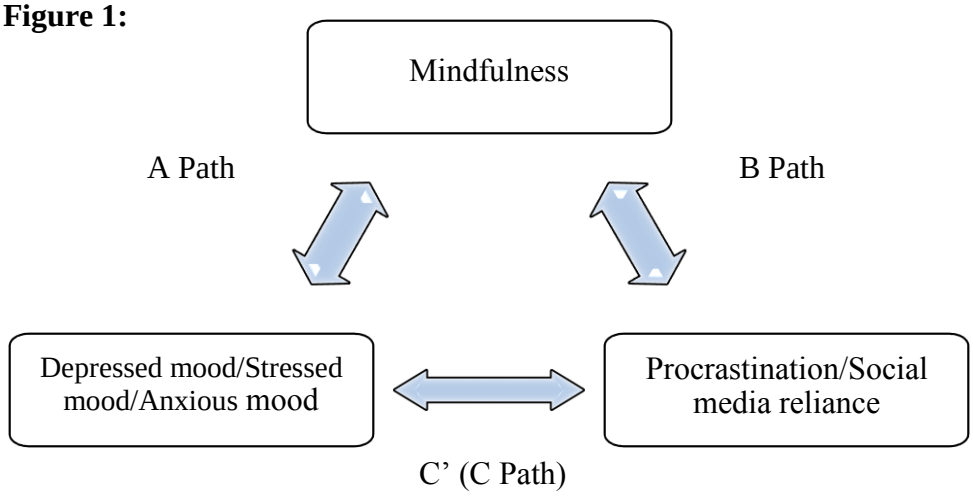

Figure 1 displays a template mediation model for the current study. Depressed mood/Stressed mood/Anxious mood are the input or independent variables. Mindfulness is the mediating variable. Procrastination/Social media reliance are the output or dependent variables.

Procedure

For the current study, questionnaires were designed and uploaded by means of Google forms. A link with a brief description of the study was then shared online via Facebook through the researchers account. The link to the Google form was also shared with contacts of the researcher via email. The google form contained a homepage which once again stated a brief description of the study, with basic instructions on how to complete the questionnaires and a statement which informed participants that by completing the questioners they give consent to take part in the study. Participants were also informed that they may discontinue their participation at any point, and that their data would be gathered and stored anonymously. Contact details of the researcher where listed, for the purpose that participants may have required additional information or wished to discontinue their participation.

Participants were first asked to state their age and gender, before completing the questionnaires. The questionnaires on the google form were broken into 3 sections: (1) pure procrastination scale

and social media use and integration scale, (2) FFMQSF and (3) DASS 21. Before each section there were instructions on how to complete to questionnaires. Additionally before section 2 and 3, participants were advised to take a 2-3 min break away from their screens before completing the section, in order to avoid fatigue. The study was designed in accordance with National College of Ireland's and Psychological Society of Ireland's ethical guidelines in research, as participants were not subjected to any stimuli which may have caused them to succumb to any negative feelings any more than would be possible in their day to day lives. Once participant's data was gathered it was immediately transferred into, and stored anonymously in a Microsoft Excel file.

Results

Descriptive

Table 1:

Descriptive statistics of all study variables

	Mean	SD	Range	Possible Range
Mindfulness	83.19	8.09	59-103	24-120
Depressed mood	17.31	8.11	7-35	7-35
Stressed mood	20.20	6.73	7-35	7-35
Anxious mood	18.04	7.27	7-35	7-35
Procrastination	34.43	10.43	12-57	12-60
Social media reliance	30.66	8.28	14-50	10-50

The descriptive statistics presented (Table 1) suggest that scores for all study variables are relatively normally distributed, with a slender bias for slightly higher scores of mindfulness, stressed mood, procrastination and social media reliance amoung the current sample. Additionally descriptive statistic scores suggest the current sample displayed neutral or mid-levels of depressed mood and anxious mood. Table 1 also suggests that the current sample were not a highly mindful sample with the highest score 17 points off the highest possible score.

Correlation

Table 2:

Correlations between all study variables

Variables	1	2	3	4	5	6
1. Mindfulness	1					
2. Depressed mood	-.16	1				
3. Stressed mood	-.03	.76**	1			
4. Anxious mood	-.05	.72**	.74**	1		
5. Procrastination	-.20*	.49**	.40**	.42**	1	
6. Social media reliance	-.07	.26**	.25**	.30**	.34**	1

Note. Statistical significance: *$p < .05$; **$p < .01$

Table 2 presents bivariate Pearson correlations between all study variables. Consistent with theory and prior research findings depressed, stressed and anxious moods were all positively correlated with each other, whilst also being correlated positively with procrastination and social media reliance. Additionally and also in line with prior research and theory, procrastination and social media reliance were positively correlated with each other and procrastination was negatively correlated with mindfulness. Conflicting with prior research and theory mindfulness was not correlated with depressed, stressed and anxious moods or social media reliance.

Bootstrapped mediation

The current study used mediation analyses based on 5000 bootstrapped samples using bias-corrected and accelerated 95% confidence intervals (Preacher & Hayes, 2013). There were six

mediation models used concerning the study variables (IV's) depressed mood, stressed mood & anxious mood, (MV) mindfulness and (DV's) procrastination and social media reliance.

Model 1: No association was found between stressed mood and mindfulness (β = -.04, *t* (135) = -.38, *p* = .17). Mindfulness was negatively associated with procrastination (β = -.24, *t* (135) = -2.35, *p* = .02). A positive association was found between stressed mood and procrastination (β = .62, *t* (135) = 5.10, *p* < .001). Mindfulness was not a successful mediator (Effect = .009, CI = -.04 to .09). *See figure 2 in Appendices*

Model 2: No association was found between stressed mood and mindfulness (β = -.04, *t* (135) = -.38, *p* = .71). Mindfulness was not associated with social media reliance (β = -.07, *t* (135) = -.76, *p* = .11). A positive association was found between stressed mood and social media reliance (β = .31, *t* (135) = 3.00, p = .003). Mindfulness was not a successful mediator (Effect = .002, CI = -.01 to .05). *See figure 3 in Appendices*

Model 3: No association was found between depressed mood and mindfulness (β = -.16, *t* (135) = -1.85, *p* = .07). Mindfulness was not associated with procrastination (β = -.16, *t* (135) = -1.61, *p* = .11) A positive association was found between depressed mood and procrastination (β = .60, *t* (135) = 6.11, p < .001). Mindfulness was not a successful mediator (Effect = .025, CI = -.005 to .109). *See figure 4 in Appendices*

Model 4: No association was found between depressed mood and mindfulness (β = -.16, *t* (135) = -1.85, *p* = .07). Mindfulness was not associated with social media reliance (β = -.03, *t* (135) = -.36, *p* = .72). A positive association was found between depressed mood and social media reliance (β = .26, *t* (135) = 3.05, p = .002). Mindfulness was not a successful mediator (Effect = .005, CI = -.02 to .06). *See figure 5 in Appendices*

Model 5: No association was found between anxious mood and mindfulness (β = -.06, *t* (135) = -.59, *p* = .56). Mindfulness was negatively associated with procrastination (β = -.23, *t* (135) = -2.26, *p* = .03). A positive association was found between anxious mood and procrastination (β = .59 *t* (135) = 5.28, p < .001). Mindfulness was not a successful mediator (Effect = .013, CI = -.03 to .10). *See figure 6 in Appendices*

Model 6: No association was found between anxious mood and mindfulness (β = -.06, *t* (135) = -.59, *p* = .56). Mindfulness was not associated with social media reliance (β = -.06, *t* (135) = -.68, *p* = .50). A positive association was found between anxious mood and social media reliance (β = .34 *t* (135) = 3.61, p < .001). Mindfulness was not a successful mediator (Effect = .003, CI = -.01 to .05). *See figure 7 in Appendices*

Mediation analysis results are consistent with Pearson correlation analysis results for the current study, with all prior associations replicated, with no new associations found. Interestingly, mindfulness was only correlated with procrastination in two of the three possible models, suggesting a minimal relationship. Additionally in model's three and four, the negative relationship between depressed mood and mindfulness was bordering upon statistical significance. Given that there were no associations found amoung any of the A path's or B path's when social media reliance was the dependent variable, it is perhaps not surprising that mindfulness was not a successful mediator in any of the six models.

Discussion

The current study has five main hypotheses and one key aim:

Hypotheses:

1. All mood variables will be positively associated with each other
2. Mindfulness will be negatively associated with the mood variables
3. Both behaviour and reliance variables will be positively associated with each other
4. Mindfulness will be negatively associated with the behaviour and reliance variables
5. Both behaviour and reliance variables will be positively associated with the mood variables

Aim:

1. Mindfulness will mediate the relationship between the mood variables and the behaviour and reliance variables

Results relating to each hypothesis and aim in the current study will now be discussed, and their relationship to prior research and theory will be summarised.

Hypothesis one

The results of the current study have proved the first hypothesis, with all three mood variables (stressed mood, depressed mood and anxious mood) found to be highly associated with each other. These results remain consistent with existing literature and theory, which suggest that depressed anxious and stressed moods should be viewed as existing together along a continuum. Meaning that an individual who experiences one of these moods, is unlikely to experience it without the existence of one or more of the other moods (Jihan, et al. 2012). Such viewing of depressed, anxious and stressed mood is somewhat controversial, with the diagnostic and statistical manual of mental disorders five (DSM-5) stating that major depression, stress and anxiety disorders are completely separate occurrences. This viewing of depressed, stressed and anxious moods assumes that doctors, psychiatrists and counselling psychologists etc. should treat clients who display such moods in completely different ways, perhaps suggesting that treating

them similarly to each other would be like prescribing an individual with an eye infection, medication for abdominal pain.

Such viewing of psychological and mood disorders has come under criticism recently, with researchers suggesting that viewing psychological constructs in the same way doctors view diseases could be detrimental to diagnosis and treatment. Bradford (2010) states that mood, emotion, cognitions and behaviour are all so closely linked to each other and react to one another, making it perhaps impossible for each individual mood disorder to occur alone without the existence of some degree of another. Bradford (2010) has extensively reviewed the processes involved in the writing of the DSM and from his exploration has suggested that the DSM's major flaw is it's assumption that psychological constructs can be defined and diagnosed as simply and as exclusively as diseases. Bradford's (2010) work fits in perfectly with the findings of the current study and existing literature, which appear to suggest a new way of viewing, diagnosing and treating mood disorders. Perhaps stressed, anxious and depressed moods are all products of one overwhelming mood or disorder, which would mean that individuals who exhibit such moods should be prescribed identical and consistent treatment. Maybe a complete overhaul of the DSM would be too radical but perhaps when writing the DSM-6, disorders could be viewed less exclusively. Whilst the current study's findings add to existing literature by offering support for a new inclusive way of viewing, diagnosing and treating psychological and mood disorders, it also displays that existing findings which state a strong relationship between depressed, anxious and stressed moods, uphold amongst an Irish sample.

Hypothesis two

Hypothesis two, being that mindfulness will be negatively associated with all mood variables was not proved in the current study's results. Mindfulness was not found to be negatively associated to any of the mood variables, however a near statistically significant relationship between mindfulness and depressed mood was observed in bivariate Pearson correlations and through bootstrapped mediation. These results can be viewed in relation to existing literature in three ways, but no matter what way they are interpreted, they contradict existing findings which suggest mindfulness should be negatively associated with depressed anxious and stressed mood (Davidson, et al. 2003; Farb, et al. 2010; Way, et al. 2010).

The first, and perhaps most basic way of interpreting the relationship between the current study's results and existing literature relates to the demographics and size of the sample used. Perhaps mindfulness scores don't negatively correlate with depressed, anxious and stressed mood scores amongst an Irish sample or maybe the sample size of 135 participants was not enough to adequately find such a relationship, which would make sense as depressed mood scores were correlated negatively with mindfulness scores bordering upon statistical significance. Such notions whilst possible, are slightly unlikely considering mindfulness scores have been found to be negatively associated with depressed, anxious and stressed mood scores across varying samples consisting of large and small sample sizes.

Perhaps the most likely explanation for why no significant negative relationships were found, relates to the way in which mindfulness was measured amongst the current sample. As mindfulness was measured exclusively as a trait in the current study with no experimental manipulation of mindfulness scores through training or retreats etc. Maybe it is due to this method of measurement that no significant negative relationship was found, as in almost all the presented literature where mindfulness was negatively associated with depressed, anxious and stressed moods, an experimental manipulation of mindfulness scores was used through means of mindfulness training or a mindfulness retreat. Suggesting that naturally having a tendency towards more mindful traits, is not enough to protect against negative moods.

The third, slightly controversial explanation for no negative association being found between mindfulness depressed, anxious and depressed moods relates once more to the sample used. As the current study used a completely non-clinical sampled gathered online via Facebook and email, maybe the use of a completely non-clinical sample explains the lack of a negative relationship. Perhaps mindfulness scores only relate negatively to depressed, anxious and stressed mood amongst a clinical sample. Meaning that whilst mindfulness interventions are commonly viewed as an effective, up and coming treatment for mood disorders, and trait mindfulness is thought to be negatively associated with such mood disorders, maybe such inferences do not uphold outside of a clinical sample, which is what a large majority of the presented literature used.

In truth the exact reason for the lack of a negative relationship between mindfulness, depressed, anxious and stressed mood is unknown. However such a contradiction being found in the current

study makes it interesting to note what relationship might occur between mindfulness and the mood variables if, in future research mindfulness was measured exclusively as a trait, with no experimental manipulation, amongst both clinical and non-clinical samples simultaneously.

Hypothesis three

The results of the current study prove the third hypothesis, with procrastination and social media reliance scores being found to be positively associated. However the association between both variables, although statistically significant was not an association of optimal strength, somewhat contradicting Pychyl et al.'s (2013) theory of social media procrastination. Pychyl et al.'s theory states that in modern society where there are so many distractions, methods of procrastination are evolving rapidly. Additionally the theory states the ever increasing levels of social media use have led to a new phenomenon known as social media procrastination, which in turn states that in modern society procrastination goes hand in hand with social media use. In order for this theory to be true however, procrastination and social media reliance would need to be highly associated with each other which was not the case in the current study.

Existing published research relating to Pychyl et al.'s theory is limited in quality and quality, with only one study found which directly measured the relationship between procrastination and social media use. The study presented asked users of a mobile phone app to state their methods of procrastination with an overwhelming amount of them citing social media as the reason for their procrastination (Huntnewsnucom, 2014). This study whilst it does support the theory of social media procrastination, and is consistent with the current study's findings, that alone is not enough to honestly prove a theory.

In summary, one of the current study's main strengths is that it is the first to quantitatively assess the direct relationship between procrastination and social media reliance. With that in mind it appears that the current study is stuck in a sort of limbo between proving, and disproving Pychyl et al.'s theory. Even though a positive association was found between procrastination and social media reliance, it is difficult to draw significant inferences from these findings as they are the first of their kind. Nonetheless these findings open the door for future research to further explore the relationship between procrastination and social media reliance. Perhaps a better way of

assessing the relationship between procrastination and social media reliance would be through a regression analysis, testing how much variance amongst social media reliance scores could be explained by procrastination. Maybe after such analysis was carried out the relationship would become much clearer.

Hypothesis four

Hypothesis four states that mindfulness will be negatively associated with both behaviour and reliance variables. The results of the current study reflect that this hypothesis was partially proved, as mindfulness was found to be negatively associated with procrastination, however no association was found between mindfulness and social media reliance. Although a negative association was found between mindfulness and procrastination through Pearson correlation, it was only a barely statistically significant result. Additionally procrastination and mindfulness were negatively associated in just two of the three possible mediation models. This suggests that the relationship between mindfulness and procrastination is minimal. These findings, whilst being consistent with prior findings, (Pychyl, et al. 2007; Flett, et al. 2014; Sirois, et al. 2012) cannot accurately prove or disprove Pychyl's theory of mindfulness and procrastination. This theory states that due to mindfulness and procrastination occurring because of polarized levels of emotional regulation, (mindfulness = optimal & procrastination = minimal) they are complete opposites of one another. If this were totally true however a stronger negative relationship would have been found. Perhaps further research assessing the relationship between mindfulness and procrastination, maybe using an experimental manipulation of mindfulness alongside a trait measure, could shed light on the true nature of their relationship.

The findings from the current study, relating to mindfulness not being significantly negatively associated with social media reliance, reflect badly on Pychyl et al.'s theory of social media procrastination mentioned previously. If this theory is true then, the relationships between mindfulness and both procrastination and social media reliance would have been similar in the current study's results, however the results display very different relationships. Both procrastination and social media reliance are negatively associated to some degree with mindfulness, with procrastination's association showing minimally statistically significant. However, the negative relationship scores for social media reliance and mindfulness reflect such

a small relationship that it borders non-existent. Inferences drawn from these results are limited due to one of the main justifications for carrying out the current study, being that it is the first study to measure the direct relationship between mindfulness and social media reliance, so more research in this area is needed to paint a clearer and more accurate picture. Until then mindfulness perhaps should not be used as a method of reducing social media reliance.

Hypothesis five

Results from the current study fully prove the fifth hypothesis, with all mood variables being found to be significantly associated with both behaviour and reliance variables. The associations between mood variables and procrastination were slightly stronger than those with social media reliance. Nonetheless these results offer some support for Pychyl et al.'s theory of social media procrastination. In relation to prior findings, the results for the current study are consistent with all presented prior research concerning procrastination, with strong associations being made between mood variables and procrastination (Antony et al. 1998; Stober et al. 2001; Van Eerde, 2003; Flett, 2012). However it is the first time such findings have been replicated amongst an Irish sample, and it is the first time the associations have been tested through bootstrapping as well as Pearson correlation, which resulted in increased beta values.

Concerning social media reliance and its relationship with mood variables, the results of the current study contradict some prior research (Toma, et al. 2012; Kim, et al. 2011). Which found social media to have positive relationships with aspects associated with mood such as perceived well-being and self-image. However research which is more similar to the current study, which assessed the direct relationships between mood and social media reliance found a strong positive association between social media reliance, depressed, anxious and stressed mood (Moreno, et al. 2011; Morrison, et al. 2010; Chou, et al. 2012; Steers, et al. 2014). Such findings are consistent with the current study's results, which sway the argument in favour of there being a strong relationship between mood and social media reliance. Similarly to the procrastination research, the current study offers support for an association between mood and social media reliance amongst and Irish sample, where relationships were measured using a Pearson correlation and bootstrapped mediation. Once again beta values increased in the mediation analysis.

In summary, the current study's findings along with the large majority of prior research, suggest that depressed, anxious and stressed moods are highly associated with procrastination and social media reliance. Meaning that an individual who presents such moods is much more likely to engage in procrastination type behaviour and is more likely to be reliant on social media, or visa-versa. Perhaps such knowledge could be used to tailor treatments for individuals who present with a mood disorder, specifically treatments where the individual with the mood disorder is expected to independently work on tasks to improve their mood, treatments such as some types of cognitive behavioral therapy (CBT), perhaps should be avoided as the individual may be more likely to procrastinate rather than engaging in the required task.

Bootstrapped mediation aim

The bootstrapping mediation analysis aim, was in truth completely unsuccessful. Mindfulness was not found to mediate the relationships found in Pearson correlation between mood variables and behaviour and reliance variables, in any of the six mediation models. Perhaps these results are to be expected considering no significant association was found amongst any of the A-paths (relationship between mood variables and mindfulness). Literature suggests that a significant relationship on A-paths is essential for a successful mediation model (Preacher & Hayes, 2013).

Suggested reasons for why A-paths were not associated, are identical to those which are presented to explain why hypothesis two was unsuccessful, being that the sample size may have been too small or mood is just not associated with mindfulness in an Irish sample. Maybe it is due to mindfulness being measured exclusively as a trait rather than using an experimental manipulation of mindfulness, or perhaps a non-clinical sample just does not benefit from mindfulness in the same way a clinical sample does. Most likely it is a combination of all of these suggested reasons which have resulted in the current study findings completely contradicting prior research (Davidson, et al. 2003; Farb, et al. 2010; Way, et al. 2010). Nonetheless the doors have now been opened for mindfulness to be assessed as a mediator between mood and procrastination/social media reliance.

Conclusion, limitations, strengths and recommendations

In conclusion the current study presents a number of significant findings, some of which are the first of their kind, such as; the current study being the first to quantitatively measure and find a significant relationship between procrastination and social media reliance. Additionally the current study is the first which uses an Irish sample to test and find a relationship between mindfulness and procrastination and the first to test and find a relationship between negative moods and procrastination/social media reliance. The current study seems to gain much of its strength from it making such breakthroughs in Irish and international research.

The fundamental limitation of the current study is perhaps the way in which mindfulness is measured. Prior research and theory suggest that findings from the current study may have been much more significant had mindfulness been experimentally manipulated through means of mindfulness training, or similar. Nonetheless it is interesting to observe how trait mindfulness alone is related to depressed, anxious and stressed mood so minimally, with only depressed mood's relationship with mindfulness bordering upon statistically significant. Another limitation of the current study is the fact that two of its scales are measured on five point Likert scales when instructions for the scales recommend use of a 4 point scale. However as internal reliability increased with the introduction of an extra point, perhaps the inclusion of the 5^{th} point add to the study rather than taking away from it.

With that in mind, the recommendations that are made for future research are; to keep everything the same apart from perhaps attempting to increase the variety of demographics amongst the sample, whilst also increasing the sample size. Additionally the key recommendation would be to measure mindfulness both as a trait and through means of an experimental manipulation, perhaps then the results expected in all of the current studies hypotheses, would be achieved. In short the current study is ambitious, somewhat significant but needing a methodological tweak.

References

1. Antony, M. .M, Purdon, C. .L & Huta, V. (1998). Dimensions of perfectionism across the anxiety disorders. *Journal of behavior research and therapy*, 36(12), 1143-1154.
2. Bodhi, B. (2000). *A comprehensive manual of Aldihamma*. Seattle: BPS Pariyatti.
3. Bohlmeijer, E., ten Klooster, P., Fledderus, M., Veehof, M., Baer, R. (2011). "Psychometric properties of the five facet mindfulness questionnaire in depressed adults and development of a short form." *Assessment* 18(3): 308-320
4. Bradford, G. .K. (2010). Fundamental Flaws of the DSM: Re-Envisioning Diagnosis. *Journal of Humanistic Psychology*, 50(3), 335-350.
5. Brown, K. .W, Ryan, R. .M & Creswell, J. .D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry*, 18(1), 211-237.
6. Chambers, R, Lo, B. .C. .Y & Allen, N. .B. (2008). The impact of intensive mindfulness training on attentional control, cognitive style and affect. *Cognitive Therapy and Research*, 32(1), 303-322.
7. Chou, H.-T. G., & Edge, N. (2012). "They are happier and having better lives than I am": The impact of using Facebook on perceptions of others' lives. *Cyber Psychology, Behavior & Social Networking*, 15, 117–121.
8. Corcoran, K. .M, Farb, N & Anderson, A. (2010). *Mindfulness and emotion regulation: Outcomes and possible mediating mechanisms*. New York: Guilford Press.
9. Davidson, R. .J, Kabat-zinn, J & Schumacher, J. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine*, 66(1), 149-152.
10. Dewitt, S & Schouwenburg, H. (2002). Procrastination, temptations, and incentives: the struggle between the present and the future in procrastinators and the punctual. *European Journal of Personality*, 16(6), 469-489.
11. Didonna, F. (2009). *Clinical handbook of mindfulness*. New York: Springer.
12. Duggan, M, Ellison, N. .B & Lampe, C. (2015). Numbers, facts and trends shaping the world: Social Media Update 2014. *Pew Research Center*, 1(1), 1-17.
13. Farb, N. .A. .S, Anderson, A. .K & Mayberg, H. (2010). Minding one's emotions: Mindfulness training alters the neural expression of sadness. *Emotion*, 10(1), 25-33.

14. Ferrari, J, Mason, C & Hammer, C. (2006). Procrastination as a predictor of task perceptions: Examining delayed and non-delayed tasks across varied deadlines. *Individual Differences Research*, 4(1), 28-36.
15. Flett, A. & Pychyl, T.A. (2014). *Procrastination, Rumination, and Distress in Students: An Analysis of the Roles of Self-Compassion and Mindfulness*. Poster presented at the Canadian Psychological Association Annual Conference.
16. Flett, G. .L. (2012). Procrastination and Self-Regulatory Failure: An Introduction to the Special Issue. *Journal of Rational-Emotion, Cognitive-Behavioral Therapy*, 30(4), 203-212.
17. Germer, C. .K, Siegel, R. .D & Fulton, P. .R. (2005). *Mindfulness and psychotherapy*. New York: Guilford Press.
18. Griffiths, M. .D. (2013). Social Networking Addiction: Emerging Themes and Issues. *Journal of Addiction Research & Therapy*, 3(7), 11-18.
19. Henry, J. .D & Crawford, J. .R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): construct validity and normative data in a large non-clinical sample. *The British Journal of Clinical Psychology*, 44(2), 227-239.
20. Hoffman, S. .G, Sawyer, A. .T & Witt, A. .A. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 78(1), 169-183.
21. Huntnewsnucom. (2014). *The Huntington News*. Retrieved 26 February, 2016, from http://huntnewsnu.com/2014/12/nu-students-admit-social-media-as-largest-source-of-procrastination
22. Jenkins-Guarnieri, M. A., Wright, S. L., & Johnson, B. (2013). Social Media Use Integration Scale [Database record]. Retrieved from PsycTESTS. doi: http://dx.doi.org/10.1037/t28032-000
23. Jihan, S., Ruth, T., Terry, L. (2012) The Relationship among Young Adult College Students' Depression, Anxiety, Stress, Demographics, Life Satisfaction, and Coping Styles. *Issues in Mental Health Nursing*, 33 (3), 147-159.
24. Kiken, L. .G, Garland, E. .L & Bluth, K. (2015). From a state to a trait: Trajectories of state mindfulness in meditation during intervention predict changes in trait mindfulness. *Personality and Individual Differences*, 81(1), 41-45.

25. Kim, J., & Lee, J.-E.R. (2011). The Facebook paths to happiness: Effects of the number of Facebook friends and self-presentation on subjective well-being. *Cyber psychology, Behavior, and Social Networking*, 14, 359–364.
26. Kotanski, M & Hassed, C. (2008). Mindfulness as a concept and a process. *Australian Psychologist*, 43(1), 15-21.
27. Kroese, F. .M, De ridder, D & Evers, C. (2014). Bedtime procrastination: introducing a new area of procrastination. *Frontiers in Psychology*, 5(611), 1-8.
28. Kuss, D. .J & Griffiths, M. .D. (2011). Online social networking and addiction--a review of the psychological literature. *International Journal of Environmental Research and Public Health*, 8(9), 27-35.
29. McKim, R. .D. (2008). Rumination as a mediator of the effects of mindfulness: Mindfulness based stress reduction (MBSR) with a heterogeneous community sample experiencing anxiety, depression and/or chronic pain. *Dissertation Abstracts International: Section B: The sciences and Engineering*, 68(1), 7673.
30. Moreno, M. A., Jelenchick, L. A., Egan, K. G., Cox, E., Young, H., Gannon, K. E., & Becker, T. (2011). Feeling bad on Facebook: Depression disclosures by college students on a social networking site. *Depression and Anxiety*, 28, 447–455.
31. Morrison, C. M., & Gore, H. (2010). The relationship between excessive internet use and depression: A questionnaire-based study of 1,319 young people and adults. *Psychopathology*, 43, 121–126.
32. Pychyl, T. .A. (2013). *Solving the Procrastination Puzzle: A Concise Guide to Strategies for Change*. New York: Penguin.
33. Pychyl, T.A., & Rotblatt, A. (2007). *Mindfulness Meditation as an intervention for academic procrastination*. Paper presented at the biannual conference, counseling the Procrastinator in Academic Settings, Catholic University of Peru, Lima, Peru.
34. Ramel, W. Goldin, P. R., Carmona, P. E., & McQuaid, J. R. (2004). The effects of mindfulness mediation on cognitive processes and affect in patients with past depression. *Cognitive Therapy and Research*, 28(1), 433-455.
35. Schouwenburg, H & Lay, C. (1995). Trait procrastination and the big-five factors of personality. *Personality and Individual Differences*, 18(4), 481-490.

36. Shapiro, S. .L & Carlson, L. .E. (2009). *The art and science of mindfulness: Integrating mindfulness into Psychology and helping professions*. Washington DC: American Psychological Association.
37. Shonina, E, Van Gordona, W & Griffiths, M. .D. (2014). Mindfulness and the Social Media. *Journal of Mass Communication and Journalism*, 4(3), 9-14.
38. Shonina, E, Van Gordona, W & Griffiths, M. .D. (2014). Mindfulness as a Treatment for Behavioural Addiction. *Journal of Addiction Research & Therapy*, 4(4), 12-17.
39. Siegel, D. .J. (2007). *The mindful brain: Reflection and attunement in the cultivation of well-being*. New York: Norton.
40. Sirois, F. .M & Tosti, N. (2012). Lost in the Moment? An Investigation of Procrastination, Mindfulness, and Well-being. *Journal of Rational-Emotion, Cognitive-Behavioral Therapy*, 1(1), 13-25.
41. Steel, P. (2010). Pure Procrastination Scale [Database record]. *Retrieved from PsycTESTS*. doi: http://dx.doi.org/10.1037/t10499-000
42. Steers, M. .N, Wickham, R. .E & Acitelli, L. .K. (2014). SEEING EVERYONE ELSE'S HIGHLIGHT REELS: HOW FACEBOOK USAGE IS LINKED TO DEPRESSIVE SYMPTOMS. *Journal of Social and Clinical Psychology*, 33(8), 701-731.
43. Stöber, J., & Joormann, J. (2001). Worry, procrastination, and perfectionism: Differentiating amount of worry, pathological worry, anxiety, and depression. *Cognitive Therapy and Research*, 25(1), 49-60.
44. Toma, C. L., & Hancock, J. T. (2013). Self-Affirmation underlies Facebook use. *Personality and Social Psychology Bulletin*, 39, 321–331.
45. Utahedu. (2016). *Utahedu*. Retrieved 18 February, 2016, from http://archive.unews.utah.edu/news_releases/better-living-through-mindfulness.
46. Van Eerde, W. (2003). A meta-analytically derived nomological network of procrastination. *Personality and Individual Differences*, 35(1), 1401-1418.
47. Way, B. .M, Creswell, J. .D & Eisenberger, N. .L. (2010). Dispositional mindfulness and depressive symptomatology: Correlations with limbic and self-referential neural activity during rest. *Emotion*, 10(1), 12-24.
48. Wilson, B. .A. (2012). Belonging to Tomorrow: An Overview of Procrastination. *International Journal of Psychological Studies*, 4(1), 211-217.

Appendices

Figure 2:

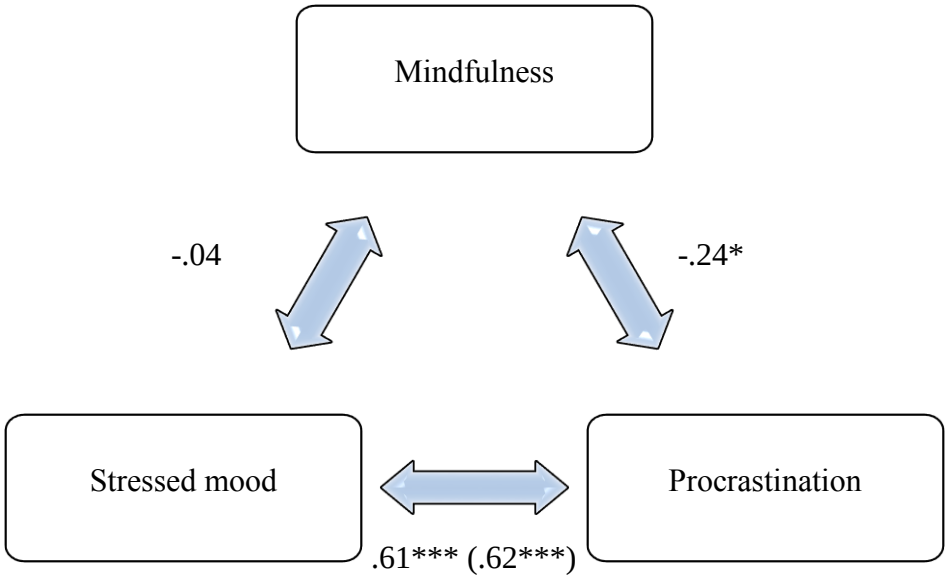

Figure 2: Indirect effect of stressed mood on procrastination through mindfulness.

*Note: *p < .05, **p < .01, ***p < .001*

Figure 3:

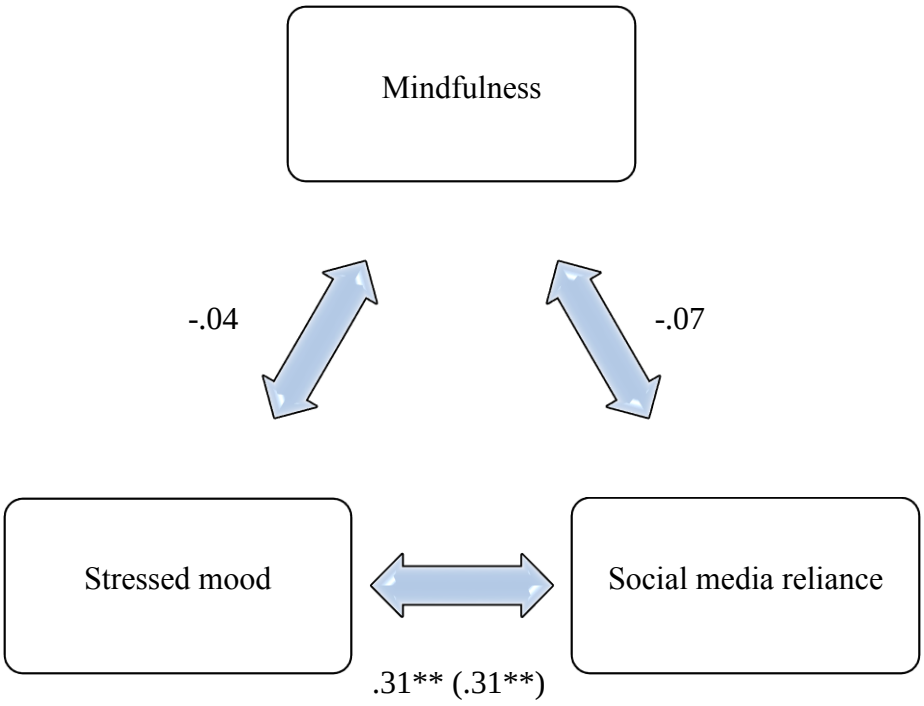

Figure 3: Indirect effect of stressed mood on social media reliance through mindfulness.

*Note: *p < .05, **p < .01, ***p < .001*

Figure 4:

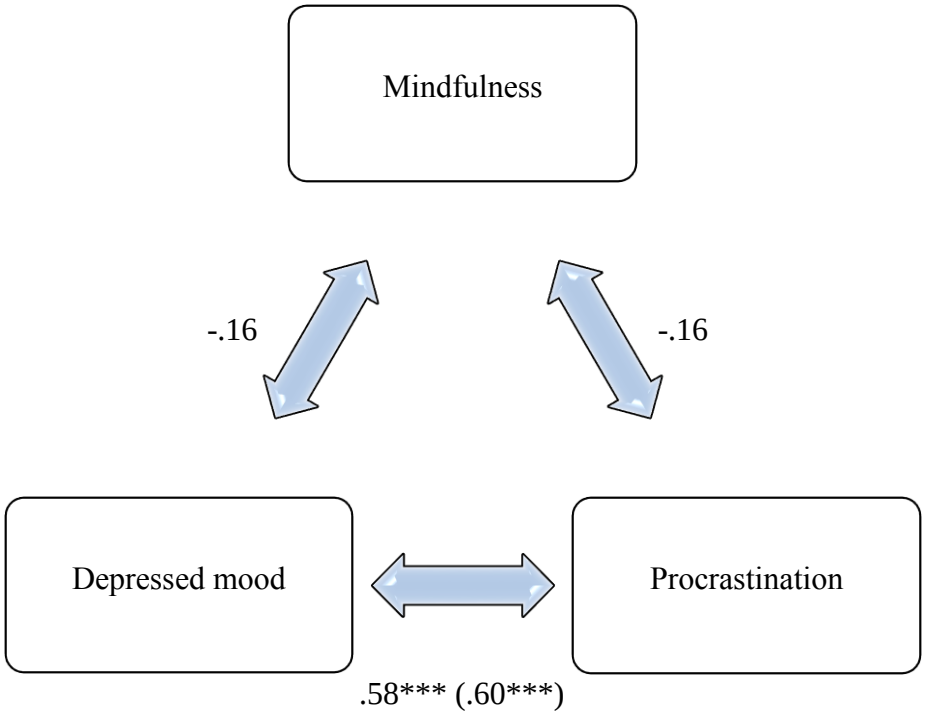

Figure 4: Indirect effect of depressed mood on procrastination through mindfulness.

*Note: *p < .05, **p < .01, ***p < .001*

Figure 5:

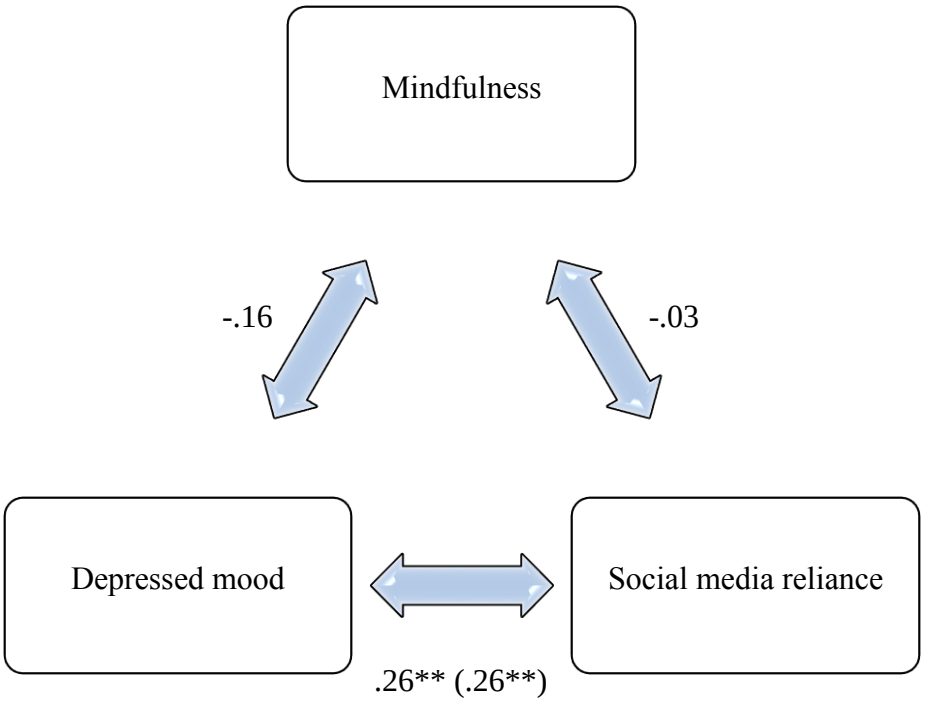

Figure 5: Indirect effect of depressed mood on social media reliance through mindfulness.

*Note: *p < .05, **p < .01, ***p < .001*

Figure 6:

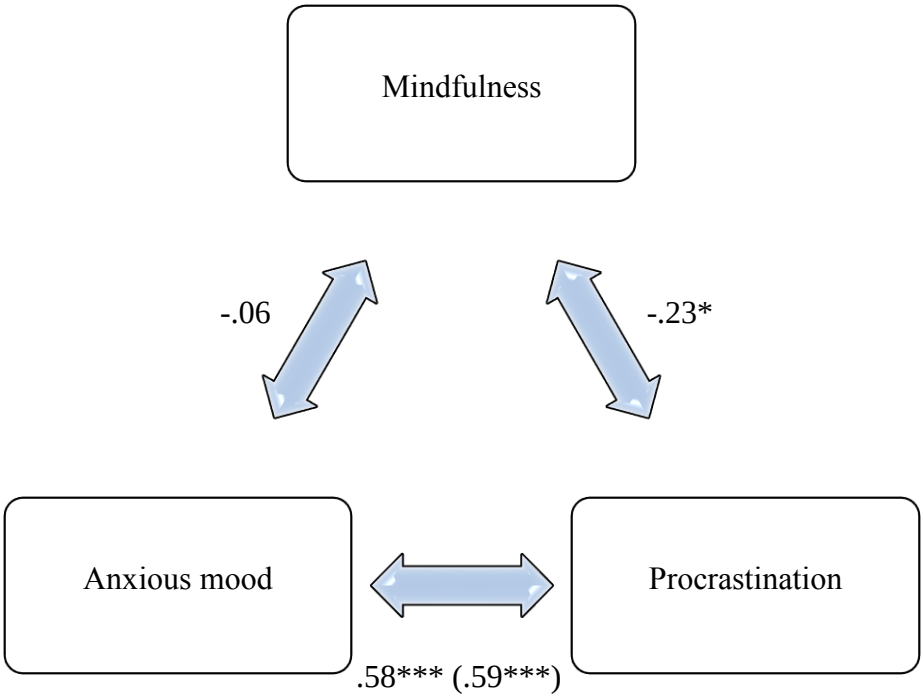

Figure 6: Indirect effect of anxious mood on procrastination through mindfulness.

*Note: *p < .05, **p < .01, ***p < .001*

Figure 7:

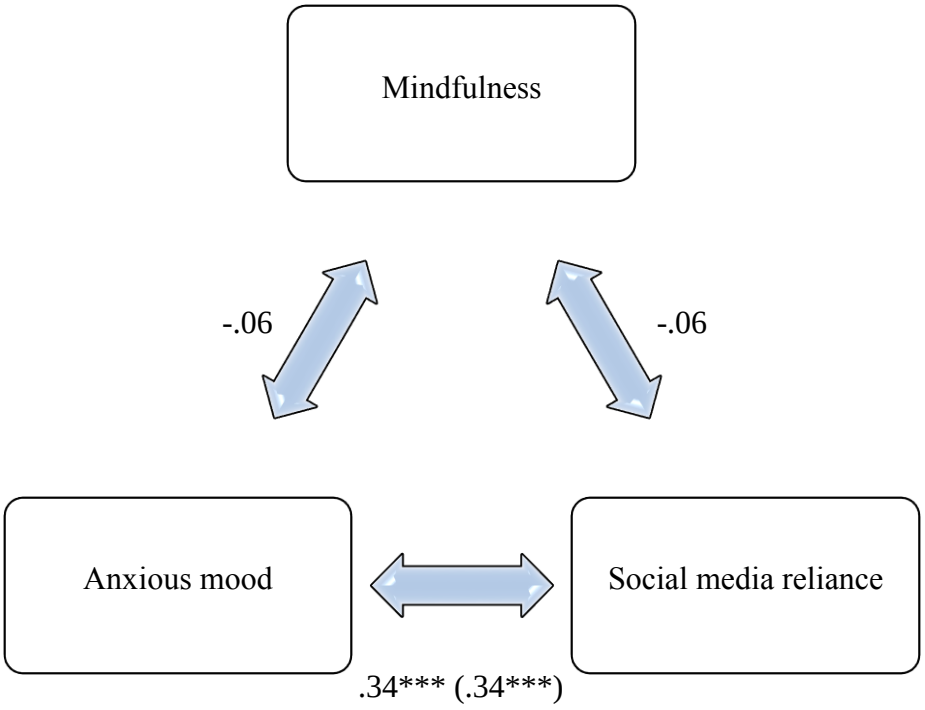

Figure 7: Indirect effect of anxious mood on social media reliance through mindfulness.

*Note: *p < .05, **p < .01, ***p < .001*

Pure Procrastination Scale:

1. I delay making decisions until it's too late.
2. Even after I make a decision I delay acting upon it.
3. I waste a lot of time on trivial matters before getting to the final decisions.
4. In preparation for some deadlines, I often waste time by doing other things.
5. I often find myself performing tasks that I had intended to do days before.
6. I am continually saying, "I'll do it tomorrow."
7. I generally delay before starting on work I have to do.
8. I find myself running out of time.
9. I don't get things done on time.
10. I am not very good at meeting deadlines.
11. Putting things off till the last minute has cost me money in the past.
12. Even jobs that require little else except sitting down and doing them, I find that they seldom get done for days.

Five Facet Mindfulness Questionnaire Short Form (FFMQSF):

1. I'm good at finding the words to describe my feelings DS
2. I can easily put my beliefs, opinions, and expectations into words DS
3. I watch my feelings without getting carried away by them NR
4. I tell myself that I shouldn't be feeling the way I'm feeling /NJ
5. It's hard for me to find the words to describe what I'm thinking /DS
6. I pay attention to physical experiences, such as the wind in my hair or sun on my face OB
7. I make judgments about whether my thoughts are good or bad. / NJ
8. I find it difficult to stay focused on what's happening in the present moment /AA
9. When I have distressing thoughts or images, I don't let myself be carried away by them NR
10. Generally, I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing OB
11. when I feel something in my body, it's hard for me to find the right words to describe it / DS
12. It seems I am "running on automatic" without much awareness of what I'm doing /AA
13. When I have distressing thoughts or images, I feel calm soon after NR
14. I tell myself I shouldn't be thinking the way I'm thinking /NJ
15. I notice the smells and aromas of things OB
16. Even when I'm feeling terribly upset, I can find a way to put it into words DS
17. I rush through activities without being really attentive to them /AA
18. Usually when I have distressing thoughts or images I can just notice them without reacting NR
19. I think some of my emotions are bad or inappropriate and I shouldn't feel them /NJ
20. I notice visual elements in art or nature, such as colours, shapes, textures, or patterns of light and shadow OB
21. When I have distressing thoughts or images, I just notice them and let them go NR
22. I do jobs or tasks automatically without being aware of what I'm doing /AA
23. I find myself doing things without paying attention /AA
24. I disapprove of myself when I have illogical ideas /NJ

Items preceded with / are reverse coded.

DASS 21:

1. I found it hard to wind down
2. I was aware of dryness of my mouth
3. I couldn't seem to experience any positive feeling at all
4. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)
5. I found it difficult to work up the initiative to do things
6. I tended to over-react to situations
7. I experienced trembling (e.g., in the hands)
8. I felt that I was using a lot of nervous energy
9. I was worried about situations in which I might panic and make a fool of myself
10. I felt that I had nothing to look forward to
11. I found myself getting agitated
12. I found it difficult to relax
13. I felt down-hearted and blue
14. I was intolerant of anything that kept me from getting on with what I was doing
15. I felt I was close to panic
16. I was unable to become enthusiastic about anything
17. I felt I wasn't worth much as a person
18. I felt that I was rather touchy
19. 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)
20. I felt scared without any good reason
21. I felt that life was meaningless

Social Media Use Integration Scale:

1. I feel disconnected from friends when I have not logged into Facebook.
2. I would like it if everyone used Facebook to communicate.
3. I would be disappointed if I could not use Facebook at all.
4. I get upset when I can't log on to Facebook.
5. I prefer to communicate with others mainly through Facebook.
6. Facebook plays an important role in my social relationships.
7. I enjoy checking my Facebook account.
8. I don't like to use Facebook. (r)
9. Using Facebook is part of my everyday routine.
10. I respond to content that others share using Facebook.

(r) = reverse coded