

Accepted Manuscript

Personality, Fear of Missing Out and Problematic Internet Use and their Relationship to Subjective Well-Being.

Holly Stead, Peter A. Bibby



PII: S0747-5632(17)30483-1
DOI: 10.1016/j.chb.2017.08.016
Reference: CHB 5114
To appear in: *Computers in Human Behavior*
Received Date: 08 February 2017
Revised Date: 09 August 2017
Accepted Date: 10 August 2017

Please cite this article as: Holly Stead, Peter A. Bibby, Personality, Fear of Missing Out and Problematic Internet Use and their Relationship to Subjective Well-Being., *Computers in Human Behavior* (2017), doi: 10.1016/j.chb.2017.08.016

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Personality, Fear of Missing Out and Problematic Internet Use and their Relationship to Subjective Well-Being.

Abstract

The current research examines how an individual's personality, their internet use and the extent to which they are inclined to fear 'missing out' impacts subjective well-being overall and in terms of emotional, physical, and personal relationship well-being. A total of 495 participants aged 18 to 30 (69% female) completed an online questionnaire via the Qualtrics website that included measures of the Big-5 personality dimensions (openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability), fear of missing out, and problematic internet use. Participants were recruited through posting messages on the Facebook social media site linking to the Qualtrics website. Multiple linear regression and mediation analyses were conducted to examine the relationship between these factors and the measures of subjective well-being. With respect to overall subjective well-being, neither age nor sex were significant predictors. Conscientiousness, extraversion, emotional stability and agreeableness were positively related to overall subjective well-being. Importantly, both fear of missing out and problematic internet use made additional significant negative contributions to overall subjective well-being. Fear of missing out and problematic internet were both negatively correlated with emotional well-being and personal relationships well-being but not physical well-being. Overall, while personality directly impacts subjective well-being both fear of missing out and problematic internet negatively affect subjective well-being above and beyond personality.

Introduction

Despite technological advances being celebrated over the last 20 years, the psychologically powerful nature of online communication has created concerns regarding its uses and possible detrimental effects (Turkle, 2012). One specific aspect of technology and the internet is the use of social media. This includes sites and applications such as Facebook, Instagram, Snapchat, Twitter and Whatsapp. These social platforms provide a plethora of online environments that are used to communicate, sustain and build friendships, and to observe real-time information and pictures concerning individuals' thoughts or actions (Lenhart, 2015). Such sites have developed rapidly, and there is an accompanying growing body of literature that indicates a negative impact on their users' behaviour. These include correlations with lower academic performance (Junco, 2012), riskier behaviour (Riordan et al, 2015), and facilitated laziness (Price-Mitchell, 2014). Rather than examining the behavioral consequences, this study focuses on the psychological impact of social media.

Previous research has established a relationship between psychological well-being and the Big-5 personality traits. These five personality traits include extroversion – being outgoing and dominating; agreeableness – being sympathetic and warm; conscientiousness – being efficient and organized; neurotic – being anxious and moody (sometimes referred to as the reverse, emotionally stable) and finally; openness – being imaginative and curious (Funder, 2013). It has been found that neuroticism is negatively correlated with psychological well-being (Kotov et al, 2010), and extraversion and emotional stability are positively correlated with psychological well-being (Correa et al, 2010; Ross et al, 2009). Although much research has emphasized the importance of neuroticism and extroversion for subjective well-being (Diener, Oishi & Lucas, 2003), meta-analyses have also indicated that agreeableness, conscientiousness and openness are also related to subjective well-being (de Neve & Cooper, 1998; Steel, Schmidt & Schultz, 2008). In general, agreeableness and conscientiousness have been found to have a positive relationship with subjective well-being. The situation with openness is somewhat more mixed with some aspects of subjective well-being positively correlated and others negative. The current study addresses these personality factors as well as additional factors related to internet use: problematic internet use (PIU) and the

fear of missing out (FOMO), to determine whether the latter provide additional explanatory value beyond that associated with personality with respect to subjective well-being (SWB) in young adults.

Spraggins (2009) first assessed PIU in relation to social media. Using a modified general internet use scale to specifically address social media she found that PIU was detrimental to daily life, with negative consequences such as interference with professional, social and personal functioning. It is suggested that these consequences occur as individuals are becoming increasingly unable to disconnect from social media (Turkle, 2012). Rosen et al (2013) found that the iGeneration (individuals born in the 1990's and early 2000's) check their social media accounts on average every 15 minutes (Rosaten et al, 2013). Other researchers have found that such use of the internet has serious consequences, including neglecting personal life, mood modifications, mental preoccupation and concealing behaviour in front of others (Young, 1998; Wu et al, 2013). Turkle (2012) has stated that this intense online communication causes an inability to develop the necessary social skills needed for face-to-face communication and is having a psychologically negative impact. Individuals highly active on social media are 2.7 times more likely to develop depression (Ellis, 2016) and excessive Facebook use is associated with people feeling less satisfied with their lives, having lower self-esteem (Ellison et al, 2007), and having heightened anxiety (Rauch et al, 2014). Cheever et al (2014) found that when young individuals had their smartphones unexpectedly taken from them, those with extensive internet and social media use displayed much higher levels of anxiety. Individuals with higher smartphone use (suggesting more social media engagement) had significantly greater sleep problems compared to those with lower smartphone use (Demirci et al, 2015). This indirectly caused higher stress levels and lower academic performance in the higher smartphone use group compared to individuals with lower smartphone use. Liberty Mutual Insurance and SADD (2015) stated 48% of young adults access social media whilst driving. In 2013, there were 300,000 injuries and some 3,000 fatal accidents from distracted young drivers using mobile phones. This exceeds the number of young adults who are killed from drink driving annually. What is more, 88% of young people who use their mobile phones whilst driving consider themselves to be 'safe' drivers. These studies highlight the variety of negative consequences that internet use can have.

FOMO is defined as 'as a pervasive apprehension that others might be having rewarding experiences from which one is absent' (Przybylski et al, 2013, p. 1841). For individuals who have FOMO, participating in social media is particularly attractive as it provides both social connection

and involvement. Yet this comes with consequences. FOMO is related to negative emotional feelings that influence behavior (Hetz et al, 2015) and the degree of sociality in terms of social envy and social exclusion (Reagle, 2015). Jordan et al (2011) highlighted how individuals overestimate the positive emotional experiences and underestimate the negative emotional experiences of other people's lives compared to their own. They misperceive other people as having better emotional lives than they actually do. What an individual sees online is an edited version of someone's life, highly polarised and skewed toward the positive (Reagle, 2015). Thus, people see positive emotional content online and believe their friends to be happier, more successful, and more emotionally positive compared to themselves (Chou & Edge, 2012). As a result, individuals with high FOMO often experience feelings of anxiety, low self-esteem and inadequacy (Przybylski et al, 2013).

FOMO has been found to increase social media use in young people (Przybylski et al, 2013; Alt, 2015; Vaidya et al, 2016). A key study by Przybylski et al (2013), who created the FOMO scale, concluded that individuals high in FOMO use social media sites more and are more likely to use their phones whilst driving or in class. Przybylski et al (2013) suggested that feelings of FOMO can be explained by self-determination theory: an individual has basic psychological needs including competence, autonomy and relatedness that need to be met (Deci & Ryan, 2014). FOMO has been shown to mediate those needs not being met and social media engagement. Billieux et al (2015) described the 'excessive reassurance' pathway, in which socially insecure and anxious individuals display patterns of social media use that gratify their needs for social reassurance. Alt (2015) found that FOMO mediated the relationship between motivation and social media use, with individuals high in extrinsic motivation having higher FOMO and higher social media use. Studies from non-Western populations have also found FOMO to exist and to be associated with higher social media use as seen in Vaidya et al's study (2016) on participants in India. FOMO was found to be a predictor of problematic smartphone use with greater FOMO associated with more problematic smartphone use (Elhai et al, 2016).

Different personalities have been found to use social media for different purposes. Extroverted individuals, use it for social enhancement i.e. to improve their value socially, whereas introverts use social media for social compensation i.e. to make up for their lack of friends offline (Bibby, 2008; Kuss & Griffiths, 2011). Over time, conclusions regarding personality traits have been subject to change as social media networks have developed. In 2002, Amichai-Hamburger et al. found that

individuals high in introversion and neuroticism were the most active social media users. It was suggested that these individuals have difficulty making solid social connections in real-life and thus prefer virtual company; a situation where they feel more confident. However more recent research found that extroverts were the most involved in social media. It concluded that as social media networks have moved away from anonymity to 'onymity', extroverts use this to enhance their current networks, socializing with existing friends (Lampe, Ellison and Steinfeld, 2009). Research has found that three personality traits correlated with time spent using social media are neuroticism, extroversion, and openness (e.g. Bibby, 2008; Ross et al, 2009). Correa et al (2010) also found that openness and extroversion were positively related to social media use, and that emotional stability was negatively correlated to social media use. It would be expected that, as this research measures the Big-5 personalities and uses a similar age sample as Correa et al (2010), openness, extroversion and neuroticism would all be correlated to the degree of social media use. Moreover, given that FOMO is related to social media use (Przybylski et al, 2013; Alt, 2015; Vaidya et al, 2016), and it is predicted that personality contributes to FOMO, we can expect personality to instigate a greater level of social media use indirectly through FOMO.

Research has suggested that a relationship between personality traits and FOMO exists (Przybylski et al, 2013). Given that FOMO is a socially related anxiety (Davis 2012), it seems well within reason to hypothesize personality traits relating to anxiety would predict higher levels of FOMO. Prior research has highlighted a relationship between anxiety and neuroticism including associations with both anxiety disorders (Clark et al., 1994) and less extreme, anxious feelings (Kotov et al, 2010). In light of this, it would be unusual if neuroticism did not relate to FOMO given its relationship to anxiety. However, neurotics typically display pervasive avoidance behaviour such as avoiding social situations as they can be seen as threatening (Jaffe, 2012). Therefore, it would be unlikely that neuroticism alone could explain the feeling of being left out given this social characteristic (which is widely associated with extroversion; Correa et al, 2010). It would be expected that both extraversion and neuroticism predict feelings of FOMO.

The aim of this study is to provide empirical evidence relating personality, FOMO and PIU to subjective well-being. First, it is hypothesized that personality will have a direct impact on subjective well-being. Specifically, we expect emotional stability, extraversion, agreeableness and conscientiousness to be positive correlated with subjective well-being. Previous research indicates that openness to experience relationship to subjective well-being is sometimes found to be positive and sometime negative. Thus, no specific hypothesis is made for this study. Second, that personality

predicts both FOMO and PIU. Third, it was hypothesized that FOMO and PIU will be positively correlated. The fourth hypothesis is that FOMO and PIU impact SWB independently of personality and both FOMO and PIU will have a negative impact on subjective well-being. Finally, it is hypothesized that there will be a mediated relationship between FOMO, PIU and SWB such that FOMO will have a direct negative effect on SWB and an indirect negative effect on SWB via PIU.

The study involves a questionnaire launched via Facebook. The questionnaire measures participant's personality using measures of the Big-5 personality factors, fear of missing out, problematic internet use and subjective well-being.

Method

Participants

Data was obtained from individuals on Facebook using a snowballing-sampling strategy. In total, 622 people opened the questionnaire. 94 did not answer any questions, with 522 completing either part of or the entire questionnaire. Participants below 18 years and over 30 years were excluded ($M = 20.62$, $SD = 1.60$). This removed 127 participants, leaving 495 to be included in the data analysis. 69% of these participants were females ($N = 345$), 31% were male ($N = 150$). Of the 495 participants, 399 of them were students. The subjects they study varied; the most common were Psychology ($N = 70$), History ($N = 25$), Politics ($N = 24$), Economics ($N = 21$) and Medicine ($N = 20$). The remaining participants were employed.

Participants who completed the questionnaire were asked how long they spend on social media each day. Of the 495 responses, 52.3% claimed to be on social media sites for 1-2 hours per day, 25.9% for 3-4 hours per day and 10.9% use social media sites for more than 4 hours per day. When asked how many times a day they visited social media sites, 63.8% said 10+ times per day ($N = 316$), with another 28.9% ($N=143$) using social media sites between 6-10 times per day. Only 6.9% ($N=34$) use social media sites between 1-5 times per day.

Participants were also asked how many days per week they use social media sites at specific times in the day. The scale was rated from no days a week through to every day (7 days a week). When asked how many times a week they go on social media within 15 minutes of waking up the mean score was 6.25. This indicated that on average, the 495 participants asked go on social media straight after waking up on typically 6 days of the week. If rounded to the nearest whole day, on

average, participants were found to use social media four days a week whilst eating breakfast ($M=4.01$), five days a week whilst eating lunch ($M=4.63$) and 3 days a week whilst eating dinner ($M=3.33$). And lastly, every night of the week 15 minutes before going to sleep ($M=6.87$).

Measures

Gosling, Renfrow and Swan's (2003) Ten-Item Personality Inventory (TIPI) is comprised of 10 items in pairs that represent the Big-5 personality traits. The Big-5 personality traits are Extroversion (E), Emotional Stability (ES), Agreeableness (A), Openness (O) and Conscientiousness (C). The two pairs of traits averaged represented each of the Big-5. For example, the average score of 'extroverted/enthusiastic' and the reversed 'quiet/reserved' average score represented E. Likewise; the average score of 'calm/emotionally stable' and the reversed 'anxious/easily upset' average score represented ES. Participants rated how well the adjective describes them on a 7-point Likert scale ranged from 1 = 'strongly disagree' to 7 = 'strongly agree'. Higher averaged scores equate to higher characteristics in that personality domain.

Przybylski's (2013) condensed Fear of Missing Out scale consists of 10 items. There were 5 potential responses, ranging from 1 = 'not true of me at all' to 5 = 'very true of me'. Questions were related to fear and social anxiety such as, 'I fear my friends are having more fun without me', 'when I miss a planned get together it bothers me' and 'I get anxious when I don't know what my friends are up to'. As all the variables loaded onto one factor a total score was calculated. The higher scores equated to a greater level of FOMO ($M=24.55$, $SD=7.04$, $\alpha=0.837$).

Spraggins' (2009) modified questionnaire is specifically focused upon social media rather than general internet use. The 29-item questionnaire was presented on a 5-point scale that ranged from 1 = 'strongly disagree' through to 5 = 'strongly agree'. The questions asked why someone would use the internet, how it makes them feel when they are/are not on social media, and how much it has influenced their everyday life. For example: 'I have used social networking sites to help me feel better when I have felt down or anxious', 'I lose track of time when I am on social networking sites' and 'I am more confident socializing when I'm on social networking sites'. Scores were added together to give an overall PIU score ($M=71.14$, $SD=16.17$, $\alpha=0.893$). According to Spraggins' (2009) criteria, an overall score above 87 means an individual's use of the internet is considered as problematic. 5.7% of this sample scored above 87.

Przybylski et al (2013) used life satisfaction questions to measure subjective well-being. Participants were asked how satisfied they were with their emotional health, physical health, personal relationships and life overall. The 5-point Likert scale ranged from 1 = 'not satisfied at all' to 5 = 'very satisfied'. The scores were all averaged to create one overall well-being value. A higher score indicates higher subjective well-being ($M=3.717$, $SD=0.23$, $\alpha=0.788$).

Procedure

The study was conducted through a web-based survey using an online questionnaire created using Qualtrics. A link to the 60-item questionnaire was sent out via Facebook every two weeks for two months from the 26th November 2015 to 26th January 2016. It was decided to post the link on a regular basis to maximize the number of respondents with the overall aim of collecting data from 600 participants. The link to the questionnaire was closed when this target was achieved. A Facebook status (a message on Facebook that all Facebook contacts can see) was written asking people to participate in the study. Participation was voluntary. The status noted the anonymity of the questionnaire and contained the link for it. The questionnaire took about 7-10 minutes to complete. To facilitate the collection of the data participants were asked to share the link to the questionnaire with their Facebook contacts. This study was carried out in accordance with the recommendations of the School of Psychology, University of Nottingham Ethics committee with informed consent from all participants. All participants gave informed consent in accordance with the Declaration of Helsinki.

Results

The correlations, means and standard deviations for the Big-5 personality traits, PIU, FOMO and SWB, and the outcomes of t-tests comparing males and females for each of the measured variables are shown in Table 1. Male participants rated themselves significantly higher on emotional stability compared to females, but lower for agreeableness. Contrary to previous research female participants scored significantly higher on the PIU and FOMO scales than males (Przybylski et al, 2013; Spraggins, 2009).

With respect to the correlations between the personality domains and PIU, extraversion, emotional stability, conscientiousness and agreeableness were all significantly negatively related to PIU. Scoring higher on any of these personality domains was associated with a lower score of PIU and therefore less social media use. The correlations between the Big-5 personality domains and FOMO were significant and negative for both emotional stability and conscientiousness. Therefore, for both emotional stability and conscientiousness, those who scored higher on these personality traits had lower levels of FOMO. Extraversion, emotional stability and conscientiousness were positively correlated with SWB. Greater SWB was reported for those scoring higher in these personality domains. PIU and FOMO were significantly positively correlated, with higher scores on FOMO associated with higher scores on PIU. Finally, both were significantly negatively correlated with SWB. Higher scores on PIU and FOMO were associated with lower ratings of SWB. Although not reported in Table 1, age of participant was significantly correlated with FOMO ($r=-0.13$) with older participants reporting lower FOMO.

<TABLE 1 HERE>

Given the observed pattern of correlations a series of hierarchical multiple linear regressions were used to establish whether FOMO and PIU made unique contributions to the ratings of SWB with sex, age and the Big-5 personality domains used as covariates. For each of the four measures; overall life well-being, physical well-being, emotional well-being and relationship well-being, a separate regression analysis was conducted.

<TABLE 2 HERE>

As can be seen in Table 2, sex of participant was not a significant predictor of subjective well-being for any of the four measures. Age was only a significant predictor for physical well-being. The relationship was negative suggesting that as the participants get older they become less satisfied with their physical well-being.

For each of the subjective well-being scales, personality as measured by the Big-5, was by far the most important predictor. Extraversion, emotional stability and conscientiousness were significant positive predictors for each of the measures of subjective well-being. The more extroverted, emotionally stable and conscientious participants reported themselves as, the more satisfied they were. Agreeableness was a significant positive predictor of overall life satisfaction. More agreeable

participants report higher levels of life satisfaction overall. Openness was a significant negative predictor for both physical and emotional well-being. The higher the participants rated themselves with respect to openness to experiences, the less satisfied they were physically and emotionally.

FOMO was found to be a significant negative predictor of life well-being overall, emotional well-being and relationship well-being. The more participants fear missing out the less satisfied they report themselves as being. The same pattern was found for PIU. Neither FOMO nor PIU showed a relationship with self-reported physical well-being.

Mediation analyses were conducted using Hayes (2013) method. The first analysis with PIU as a mediator for FOMO's relationship with subjective well-being found no evidence of mediation for any of the measures of well-being. A second set of analyses examined whether FOMO was a mediator of PIU. As before there was no evidence of mediation. Both of these analyses used the personality variables as covariates.

Discussion

As hypothesized the correlations suggest that certain personality traits are predictive of FOMO, PIU and SWB. Thus, it was necessary to include these variables in the analyses that examined the relationships between FOMO, PIU and SWB. An important outcome of the results is that notwithstanding the value of personality as a predictor of subjective well-being, both FOMO and PIU were found to be predictors of subjective well-being. Interestingly, there was no evidence of a mediating relationship between FOMO and PIU with respect to SWB in either direction.

The second hypothesis predicted that personality would impact the level of FOMO experienced. Previous research found that both neuroticism (Amichai-Hamburger et al, 2002) and extroversion (Lampe et al, 2009) correlate with FOMO. The results partly agree with these findings, with emotional stability negatively correlated with FOMO. In addition, it was found that conscientiousness was negatively correlated with FOMO. These findings can be explained by the characteristics of these personality variables. Neuroticism is characterized by being emotionally unstable and nervous which is likely to relate to social anxiety and thus FOMO (Jaffe, 2012). Low conscientious individuals tend to be more anti-social and less driven. They can struggle with

organization and some socializing aspects, which could explain their higher FOMO levels (Lampe et al, 2009).

The second hypothesis also suggested that personality traits predict PIU. Previously research concluded that that neuroticism (the inverse of emotional stability), extroversion and openness all predict the amount of social media use (Bibby, 2008; Correa et al, 2010; Ross et al, 2009). In relation to PIU, which is a more obsessive, uncontrolled use of social media, different personality traits contributed. Extroversion and emotional stability significantly predicted PIU. Both had a negative relationship indicating that introverted and neurotic individuals were most likely to have PIU. This follows research that concluded individuals displaying these personality traits use social media as they have trouble making social connections. Therefore they invest a lot of time and place a lot of value on social media, possibly leading to PIU (Amichai-Hamburger et al, 2002).

Previous research found that higher FOMO was related to higher social media use (Przybylski et al, 2013). This lead to the third hypothesis that FOMO and PIU are positively correlated which was met. This is an important finding, indicating that FOMO is not just a variable that heightens social media use but it is also a factor behind unhealthy, obsessive behavior.

The primary focus of the current research was to test the impact that FOMO and PIU exert on SWB. The fourth hypothesis that FOMO and PIU will significantly negative correlate with SWB taking into account personality and biographic variables was met. This demonstrates how FOMO and PIU adds additional explanatory value to SWB. Both FOMO and PIU have a negative psychological impact, and are therefore a risk to a young person's psychological health. It is worth noting that both FOMO and PIU only account for a relatively small amount of the variability in SWB. However, though the relationship is small, both FOMO and PIU are related to repetitive behaviors. On each occasion there is a risk that the impact of this behaviour is negative and this may well compound over time. Thus, notwithstanding the stronger impact that personality has been found here to have on SWB both FOMO and PIU are likely to be harmful to young individuals' subjective well-being. Specifically, the results suggest that this negative influence is felt in terms of both emotional and personal relationship well-being.

The final hypothesis was that the relationship between FOMO and SWB would be mediated by PIU. However, we found no evidence that this was the case. An alternative mediation hypothesis

that PIU impacted SWB via FOMO was also examined. This hypothesis did not find any support either. Thus, there is no evidence here that the pervasive anxiety associated with the feeling that others are doing things without us increases the likelihood of problematic internet use. Nor was it found that greater PIU led to participants experiencing greater FOMO. Failure to confirm mediation findings is unlikely to be due to a small sample size per se but may reflect the relatively small direct relationships identified between both FOMO and PIU with SWB when personality is taken into account.

Whilst this research measured many factors and used a large sample, certain considerations should be made when drawing conclusions from these results. Firstly, the use of a short form personality questionnaire and single item questions to measure subjective well-being may limit the conclusions that can be drawn from this study. To justify its use, research has found the 10-item Big-5 personality inventory to have adequate levels of validity, reliability and external correlates (Gosling et al, 2003). Nonetheless, a more detailed Big-5 inventory would have provided more reliable results. While the pattern of results for subjective well-being show a degree of face validity it is unclear from the single item measures what the specific impacts on emotional and personal relationship well-being are. For example, the current research cannot tell us whether FOMO and PIU lead to greater sadness or disappointment. Neither can the research reported here indicate whether FOMO and PIU lead to poorer relationship quality or simply a smaller number of personal relationships.

The time frame for collecting data limits this questionnaire. It was only completed at one time-point and what the current and surrounding activities of the respondents were at the time is unknown. It could be that participants completed the questionnaire having just returned from a night out with friends. On the other hand, participants may well have been sat at home waiting to do something with their friends. Given this, it would be interesting to establish whether feelings of FOMO are exacerbated by situational factors triggering it, or whether FOMO is a more continuous temperament in certain individuals. Hetz et al (2015) found students studying abroad only felt FOMO when lonely whereas other studies suggest FOMO is a more stable personality trait (Przybylski et al, 2013).

The current sample reported higher levels of social media use, FOMO and PIU than previous studies (Przybylski et al, 2013; Spraggins, 2009). A possible explanation for this is the method of recruitment for participants. Studies such as Przybylski et al (2013) recruited participants through

Amazon's Mechanical Turk system, and Correa et al (2010) recruited participants through a mass email system. These studies, alongside others, recruited participants who did not necessarily use social media sites whereas this study recruited participants via Facebook. Given that to complete the questionnaire a Facebook account was needed, this meant all of the current sample use social media sites. In fact, most of the participants reported extensive use of social media. It could be that the results reported here overstate the impact, though small, of FOMO and PIU on SWB in the general population. However, for the individual whose life is being impacted the decrement in SWB may prove to be very important.

The findings from this study suggest future avenues for research. It would be worth differentiating between the frequency of social media use and the quality of using it, to establish whether one was more important for explain the relationships identified here between FOMO, PIU and SWB. The direction of the results should also be examined in greater detail. For example, the hypothesized relationships between FOMO and PIU and SWB could in fact be reversed. It could be that lower SWB leads to greater FOMO and PIU. Perhaps, the unhappier an individual is the more likely they are to be anxious about their friendships, leading to FOMO. Similarly, it is possible that the more unsatisfied an individual is with their life offline the more they seek alternative online satisfaction, which may lead to greater problematic internet use. There is evidence to suggest that offline social network satisfaction is negatively correlated with online social media use (Bibby, 2008).

Finally, given that the current study focused on young adults, it is not known whether the identified relationships between FOMO, PIU and SWB exist or are the same for both younger and older individuals. In western societies, most people under the age of 18 years have never known a world without online social media. At the same time, throughout the world people over 50 years old only became familiar with the internet and social media use later in life, if they have at all. It is not known at this point whether such differences in experience would have differential impacts on the effects of FOMO and PIU, specifically their relationship with SWB.

The current research shows that notwithstanding differences in personality, both fear of missing out and problematic internet use have negative impacts on subjective well-being. In particular, they impact emotional and personal relationship well-being. That they do so independently of personality suggests that using social media impacts subjective well-being the way it does not just because of who we are, but importantly because of how we behave.

References

- Alt, D. (2015). College students' academic motivation, media engagement and fear of missing out. *Computer Human Behavior, 49*, 111-9. doi:10.1016/j.chb.2015.02.057
- American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders: DSM-5. Washington (D.C.): American Psychiatric Publishing.
- Amichai-Hamburger, Y. (2002). Internet and personality. *Computers in Human Behavior, 18*(1), 1–10.
- Amichai-Hamburger, Y., Wainapel, G., & Fox, S. (2002). “On the Internet No One Knows I’m an Introvert”: *Extraversion, neuroticism, and Internet interaction. Cyberpsychology & Behavior, 5*(2), 125–128.
- Bibby, P.A. (2008). Dispositional Factors in the Use of Social Networking Sites: Findings and Implications for Social Computing. *Lecture Notes in Computer Science, 5075*, 392-400. doi:10.1007/978-3-540-69304-8_40
- Billieux, J., Maurage, P., Lopez-Fernandez, O., Kuss, D. J., & Griffiths, M. D. (2015). Can disordered mobile phone use be considered a behavioral addiction? An update on current evidence and a comprehensive model for future research. *Current Addiction Reports, 2*(2), 156-162. doi:10.1007/s40429-015-0054-y
- Caplan, S. E. (2007). Relations among loneliness, social anxiety, and problematic Internet use. *Cyberpsychology & Behavior, 10*(2), 234-242. doi:10.1089/cpb.2006.9963
- Cheever, N. A., Rosen, L. D., Carrier, M. L., & Chavez, A. (2014). Out of sight is not out of mind: The impact of restricting wireless mobile device use on anxiety levels among low, moderate and high users. *Computers in Human Behavior, 37*. 290-297. doi:10.1016/j.chb.2014.05.002

- Choi, Y. H. (2007). Advancement of IT and seriousness of youth Internet addiction. *International Symposium on the Counseling and Treatment of Youth Internet Addiction*. Seoul, Korea, National Youth Commission, 20, 279-298.
- Chou, H. G., & Edge, N. (2012). “They are Happier and Having Better Lives than I am”: The Impact of Using Facebook on Perceptions of Others’ Lives. *Cyberpsychology, Behaviour & Social Networking*, 15(2), 117-121.
- Clark, L. A., Watson, D., & Mineka, S. (1994). Temperament, personality, and the mood and anxiety disorders. *Journal of abnormal psychology*, 103(1), 103.
- Correa, T., Hinsley, A. W., & De Zuniga, H. G. (2010). Who interacts on the Web?: The intersection of users’ personality and social media use. *Computers in Human Behavior*, 26 (2), 247-253.
- Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in Human Behavior*, 17(2), 187–195. doi:10.1016/s0747-5632(00)00041-8
- Davis, J. L. (2012). Social media and experiential ambivalence. *Future Internet*, 4(4), 955-970. doi:10.3390/fi4040955
- Deci, E. L., & Ryan, R. M. (2014). *Intrinsic motivation and self-determination in human behavior*. New York: Springer Science Business Media.
- Demirci, K., Akgonul, M., & Akpinar, A. (2015). Relationship of Smartphone Use Severity with Sleep Quality, Depression and Anxiety in University Students. *Journal of Behaviour Addiction*, 4(2), 85-92. doi:10.1556/2006.4.2015.010
- De Neve, K. M., & Cooper, H. (1998). The happy personality: A metaanalysis of 137 personality traits and subjective well-being. *Psychological Bulletin*, 124, 197–229.
- Diener, E., Oishi, S., & Lucas, R. E. (2003a). Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology*, 54, 403–425.
- 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 and Human Behavior*, 63, 509-516.
- Ellis, M. (2016, March 23). Social media use and depression linked in large study. Retrieved April 13, 2016, from <http://www.medicalnewstoday.com/articles/308273.php>
- 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.
- Funder, D. (2013). *The personality puzzle*. New York: W.W. Norton

- Gosling, S. D., Rentfrow, P. J., & Swann, W. B. J. (2003). A very brief measure of the big five personality domains. *Journal of Research in Personality*, 37(6), 504–528.
- Griffiths, M.D. (1998). Internet addiction: Does it really exist? *Gackenbach J. Psychology and the Internet: intrapersonal, interpersonal and transpersonal applications*. New York: Academic Press, 61-75
- Hayes, A.F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York: Guilford Press.
- Hetz, P. R., Dawson, C. L., & Cullen, T. A. (2015). Social Media Use and Fear of Missing Out (FOMO) While Studying Abroad. *Journal of Research on Technology in Education*, 47(4), 259-272.
- Jaffe, E. (2012, December 01). Inside the Neurotic Mind. Retrieved February 22, 2016, from <http://www.psychologicalscience.org/index.php/video/inside-the-neurotic-mind-2.html>
- Jenaro, C., Flores, N., Gómez-Vela, M., González-Gil, F., & Caballo, C. (2007). Problematic internet and cell-phone use: Psychological, behavioral, and health correlates. *Addiction Research & Theory*, 15(3), 309-320. doi:10.1080/16066350701350247
- Jordan, A. H., Monin, B., Dweck, C. S., Lovett, B. J., John, O. P., & Gross, J. J. (2011). Misery Has More Company Than People Think: Underestimating the Prevalence of Others' Negative Emotions. *Personality and Social Psychology Bulletin*, 37(1), 120-135.
- Junco, R., & Cotton, S. R. (2012). No A 4 U: The relationship between multitasking and academic performance. *Computers & Education*, 59(2), 505-514. doi:10.1016/j.compedu.2011.12.023.
- Kotov, R., Gamez, W., Schmidt, F., & Watson, D. (2010). Linking “big” personality traits to anxiety, depressive, and substance use disorders: a meta-analysis. *Psychological bulletin*, 136(5), 768.
- 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), 3528-3552.
- Lampe, C., Ellison, N., & Steinfield, C. (2009). A familiar face(book): Profile elements as signals in an online social network. *Proceedings of Conference on Human Factors in Computing Systems* (pp.435-444). New York: ACM Press.
- Lenhart, A. (2015, April 08). Teens, Social Media & Technology Overview 2015. Retrieved April 17, 2016, from <http://www.pewinternet.org/2015/04/09/teens-social-media-technology-2015/>
- Liberty Mutual Insurance & SADD. (2015, August 02). New Study Finds Teens ‘Fear of Missing Out’ is proving to be dangerous study. Retrieved January 07, 2016, from <https://www.libertymutualgroup.com/about-Im/news/news-release-archive/articles/new->

[study-finds-teens-fear-of-missing-out-is-proving-to-be-dangerous](#)

- Price-Mitchell, M. (2014, June 14). Disadvantages of Social Networking: Surprising Insights from Teens. Retrieved February 02, 2016, from <http://www.rootsofaction.com/disadvantages-of-social-networking/>
- Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional and behavioural correlates of fear of missing out. *Computers in Human Behavior*, 29(4), 1841-1848.
- Rauch, S. M., Strobel, C., Bella, M., Odachowski Z., & Bloom, C. (2014). Face to Face Versus Facebook: Does Exposure to Social Networking Web Sites Augment or Attenuate Physiological Arousal Among the Socially Anxious? *CyberPsychology, Behavior & Social Networking*, 17(3), 187-190. doi:10.1089/cyber.2012.0498
- Reagle, J. (2015). Following the Joneses: FOMO and conspicuous sociality. Retrieved January 07, 2016, from <http://firstmonday.org/ojs/index.php/fm/article/view/6064/4996>
- Riordan, B. C., Flett, J. A. M., Hunter, J. A., Scarf, D., & Conner, T. S. (2015). Fear of missing out (FOMO): the relationship between FOMO, alcohol use, and alcohol-related consequences in college students. *Annals of Neuroscience and psychology*, 2, 7.
- Rosen, L. D., Carrier, M. L., & Cheever, N. A. (2013). Facebook and texting made me do it: Media-induced task switching while studying. *Computers in Human Behavior*, 29(3), 948-958. doi:10.1016/j.chb.2012.12.001
- Ross, C., Orr, E. S., Sisc, M., Arseneault, J. M., Simmering, M. G., & Orr, R. R. (2009). Personality and motivations associated with Facebook use. *Computers in Human Behavior*, 25(2), 578–586. doi:10.1016/j.chb.2008.12.024
- Spraggins, A. (2009). Problematic Use of Online Social Networking Sites for College Students Prevalence, Predictors, and Association with Well-Being. Retrieved April 17, 2016, from <http://ufdc.ufl.edu/UFE0024085/00001>
- Steel, P., Schmidt, J., & Shultz, J. (2008). Refining the relationship between personality and subjective wellbeing. *Psychological Bulletin*, 134(1), 138–161.
- Turkle, S. (2012). *Alone together: Why we expect more from technology and less from each other*. New York: Basic Books.
- Vaidya, N., Jaiganesh, S., & Krishnan, J. (2016). Prevalence of Internet addiction and its impact on the physiological balance of mental health. *National Journal of Physiology, Pharmacy and Pharmacology*, 6(1), 97. doi:10.5455/njppp.2015.5.0511201588

Wu, X., Chen, X., Han, J., Meng, H., Luo, J., Nydegger, L., Wu, H. (2013). Prevalence and Factors of Addictive Internet Use among Adolescents in Wuham, China: Interactions of Parental Relationship with Age and Hyperactivity-Impulsivity. *PLoS ONE*, 8(4).

doi:10.1371/journal.pone.0061782

Young, K. S. (1998). Internet addiction: the emergence of a new clinical disorder. *Cyberpsychology & Behavior*, 1(3). 237–244.

Personality, Fear of Missing Out and Problematic
Internet Use and their Relationship to Subjective Well-
Being.

Holly Stead & Peter A. Bibby

School of Psychology
University of Nottingham
University Park
Nottingham
NG7 2RD
United Kingdom

Contact Details

Email: peter.bibby@nottingham.ac.uk

Phone: +44(0)1159515329

Fax: +44(0)1159515324

Research Highlights

- Fear of missing out and problematic internet use are negatively related to subjective well-being
- Personality traits, especially emotional stability, are positively related to SWB.
- Personality was a stronger predictor of SWB than either FOMO or PIU.

	Overall Mean (SD)	Female Mean (SD)	Male Mean (SD)	1	2	3	4	5	6	7
1) Extroversion (E)	4.92 (1.35)	4.90 (1.39)	4.96 (1.25)							
2) Emotional Stability (ES)^{##}	4.46 (1.42)	4.19 (1.40)	5.09 (1.26)	0.16**						
3) Conscientiousness (C)	4.98 (1.14)	4.97 (1.26)	4.98 (1.30)	-0.01	0.23**					
4) Agreeableness (A)[#]	4.85 (1.14)	4.93 (1.08)	4.65 (1.24)	0.02	0.07	0.03				
5) Openness (O)	5.21 (1.07)	5.23 (1.08)	5.15 (1.07)	0.20**	0.07	-0.04	0.20**			
6) FOMO	24.55 (7.04)	25.25 (7.07)	22.92 (6.70)	0.05	-0.28**	-0.20**	-0.03	-0.07		
7) PIU	71.11 (16.18)	72.48 (16.09)	67.86 (16.00)	-0.15**	-0.30**	-0.11*	-0.10*	-0.07	0.47**	
8) Well-being	3.72 (0.75)	3.67 (0.77)	3.82 (.70)	0.25**	0.47**	0.26**	0.06	-0.03	-0.27**	-0.37**

Table 1: The means (and standard deviations) of the personality, PIU and FOMO measures and their intercorrelations.

	Life Overall		Physical		Emotional		Relationship	
	ΔR^2	β						
Step 1	.003		.051**		.007		.006	
Sex		-.027		-.010		.066		-.060
Age		-.052		-.228**		-.042		.041
Step 2	.245**		.114**		.358**		.090**	
Extroversion		.162**		.129**		.155**		.208**
Emotional Stability		.387**		.193**		.550**		.125*
Conscientiousness		.150**		.180**		.103*		.104*
Agreeableness		.107**		-.054		.003		.090
Openness		-.033		-.125**		-.101*		-.020
Step 3	-.017**		.007		.010*		.029**	
FOMO		-.141**		-.089		-.105*		-.184**
Step 4	.010*		.006		.017**		.026**	
PIU		-.121*		-.090		-.157**		-.193**

*p<0.05, **p<0.01

Table 2: The changes in R-squared and beta coefficients of the four-step hierarchical regressions of biographic, personality, FOMO and PIU measures on overall, physical, emotional and relationship subjective well-being.