Relationship between Loneliness, Social Anxiety and Social Media Use

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Abstract

Loneliness and anxiety are emotions experienced by an increasing number of the population. One possible contributing factor to explain the rising prevalence of these emotional disorders is social media use. The purpose of this research was to conduct a correlational design study (N=92) on a wide age range and diverse population and identify any correlation between these emotional disorders and social media use. This study also aims to investigate if social media use can be predicted by the contributions of loneliness and social anxiety and whether age holds any significance in predicting social media use. Using data collected from three self-report questionnaires - UCLA loneliness scale, SAQ-30 social anxiety scale and the SONTUS social media use scale, correlational and hierarchical regression analyses found while social anxiety and social media use share a small positive relationship, loneliness and social media use do not correlate. The first regression analysis in this cross-sectional study found social anxiety and loneliness added no statistical significance to the prediction of social media use, with any contribution from loneliness due in large part to its relationship with social anxiety. In our last regression model, age was found to be the only significant predictor of social media use. Findings highlight need for future causal research into the psychological impact social media use has on our well-being.

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Introduction

Globally, it is estimated that up to 2.9 billion people actively use at least one form of social media today (Statista, 2019). Many see it as a useful tool for communicating, researching, marketing and obtaining information, often referred to as 'social networking'. Social networking sites (SNS) are defined as web based services that allow the individual to construct a public or semi-public profile and build a network of connections with other users (Boyd & Ellison, 2007), creating and exchanging user generated content (Lin et al., 2016). According to Statista, the most used social media website is Facebook with over 2.4 billion users worldwide, followed by YouTube, WhatsApp and Messenger (Statista, 2019). Up to 72% of the public engage daily with at least one form of social media and the Pew Research Centre (2019) also reporting that those ranging in age between 18-29 years are more likely to use social media websites with figures notably increasing in older adults, aged over 65 years (Pew Research Center, 2019). There also appears to be no significant gender differences in social media use. The average time spent on social media is now estimated to be 143 minutes daily, according to Social Media Today (2019).

Social Media Use (SMU)

Social media is defined as ' a group of internet based applications that allow the creation and exchange of user-generated content' (Lin et al., 2016). These platforms give individuals a place to cultivate their own identity and connect with their peers (Michikyan & Suarez-Orozco, 2016; Moreno & Whitehill, 2014). It also gives them a space to feel more at ease with expressing themselves (McKenna, Green, & Gleason, 2002) and establish new connections and relationships (Baden, Bender, Spring, Bhattacharjee, & Starin, 2009). In contrast, they have also been shown to have negative connotations on one's mental health (Donnelly & Kuss, 2016; Pantic et al., 2012). In today's society many individuals value

themselves based upon the number of likes they receive and the number of friends or followers they have (Bazarova, Choi, Schwanda Sosik, Cosley, & Whitlock, 2015; Kernis, Paradise, Whitaker, Wheatman, & Goldman, 2000). The negative emotions experienced by many can include anxiety, negative self-appraisal (Blease, 2015; Fox & Moreland, 2015), depressive symptomology (Lup, Trub, & Rosenthal, 2015), loneliness (Bonetti, Campbell, & Gilmore, 2010; Steafnone, Huang, & Lackaff, 2011) and social anxiety (Bodroža & Jovanović, 2016; Casale & Fiorvanti, 2015). Caplan (2006) found, while exploring the link between loneliness and social media that social anxiety was a confounding variable in the relationship between loneliness and social media use (SMU), in that social anxiety influences both loneliness and SMU, causing a spurious association. In a multi-level meta analyses of 102 cross-sectional studies and 10 longitudinal studies Maes et al. (2019) highlighted the strong association between social anxiety and loneliness with significant cross lagged effects in both directions. Meltzer et al. (2013) and Teo, Lerrigo and Rogers (2013) also found loneliness to be more prevalent in those with social anxiety disorders. Another study found that earlier loneliness positively predicted future states of social anxiety and also found that earlier social anxiety was a predictor of future loneliness which suggests that loneliness may be an antecedent to emerging mental health symptoms (Lim, Rodebaugh, Zyphur, & Gleeson, 2016). All of these studies highlight the sensitive relationship between these two subjectively defined and experienced emotions in social interactions and the importance of including social anxiety in any loneliness research.

Loneliness

Loneliness is often defined as one's connectedness to others and the unpleasant experience that arises when a person's network of social relations is deficient in some important way to them, whether it be the subjective experience of the quality or the quantity

of their interactions (Perlman & Peplau, 1981). Building on the cognitive approach to loneliness, an individual sees a discrepancy between their real and desired social relations. These negative emotions can result in individuals making negative behavioural decisions such as a lack of physical activity and sleep problems, both of which are risk factors for cognitive decline (Baumgart et al., 2015; Steptoe, Owen, Kunz-Ebrecht, & Brydon, 2004). Epel (2009) found that loneliness can also increase cortisol levels in the body and if prolonged, can affect the neural pathways of the brain related to memory.

Loneliness has become a growing concern in Ireland in recent years. According to The Irish Longitudinal study on Ageing (TILDA), it is estimated that up to 400,000 people in Ireland suffer from loneliness. (TILDA, 2018). It has been linked to many health risks such as cardiovascular disease, alcoholism and drug abuse (Holt-Lunstad et al., 2015; Nikmanesh, Kazemi, & Khosravi., 2015; Valtorta, Kanaan, Gilbody, Ronzi, & Hanratty, 2016) and the effects of loneliness have been shown to carry the same mortality risk as smoking, and an even higher risk of mortality than obesity (Olien, 2014). Loneliness is often considered an emotion experienced more by the older population, however, recent studies found that younger generations, particularly 17-25 year olds, experience loneliness now more than ever before (Beutel et al., 2017; Office for National Statistics, 2018; Polack, 2018).

According to the Loneliness Theory of Evolution these feelings drive us to seek out connection, a process referred to as the re-affiliation motive (RAM) (Qualter et al., 2015). Loneliness is known to be an aversive state which evolved to signal to an individual that their connections were under threat and needed repair. These negative feelings activate the re-affiliation motive which leads the individual to seek out social connection. However, the second component in the RAM process, the behavioural re-affiliation aspect, increases our awareness of our own loneliness which instead results in social withdrawal (Cacioppo & Grippo, 2015; Gardner, Pickett, Jefferis, & Knowles, 2005). It is suggested that this is due to

the hypervigilant state of the individual's perception of social situations. This hypervigilant state is referred to as the cognitive re-affiliation process, the third component in the process of reconnection. While feelings of loneliness lead to a need for social connection and the behavioural aspect causes withdrawal, the cognitive re-affiliation process of RAM increases the person's attention to social stimuli thus causing sensitivity to signs of rejection or fear of negative evaluation (Watson & Nesdale, 2012). These cognitive biases are also suggested to be important predictors of social anxiety symptoms (Weeks, Ooi, & Coplan, 2016). It is then plausible to suggest that withdrawal can occur and still the need to stay connected remains so sufferers may seek solace online through social media websites. This allows them a space to express themselves in a safe environment (Davis, Flett, & Besser, 2002), anonymously (Morahan-Martin & Schumacher, 2003). Lonely individuals have been shown to hold feelings of hopelessness in bringing about a change to their current emotional state (Heinrich & Gullone, 2006) and favour avoidant coping strategies over problem solving approaches (Vanhalst, Luyckx, Teppers, & Goossens, 2012).

Many studies have shown that lonely individuals use a higher amount of online communication compared with non-lonely individuals (Bonetti, Campbell, & Gilmore, 2010; Morahan-Martin & Schumacher, 2000). Contrary to their goal of wanting to feel more connected, several studies found SMU only strengthened feelings of isolation (Primack et al., 2017; Sagioglou & Greitemeyer, 2014) and comparison (Steers et al., 2014). Chou and Hsiao (2000) found that loneliness increased with time spent on social media and if the individual felt the quality of the communication was low (Appel, Holtz, Stiglbauer, & Batinic, 2012). Masi, Chen, Hawley and Cacioppo, (2011) also found loneliness to be more related to the quality over quantity of the relationship. Hunt, Marx, Lipson and Young, (2018) suggest limiting yourself to 30 minutes of social media exposure a day can significantly reduce symptoms of loneliness. Another correlational design study looked at the relationship

between SMU and loneliness and found SMU directly and positively significantly predicted loneliness (Savci & Alysan, 2016). While this study is significant in current research, one of its limitations was it focused solely on college students ranging in age from 18-27 years old.

Alternatively, Lee, Noh and Koo (2013) found SMU improved the well-being of lonely people through social support and the facilitation of self-disclosure and it's also shown to modulate negative moods (Morahan-Martin & Schumacher, 2003). Huang (2017) conducted a meta-analysis on the relationship between time spent on SNS and psychological well-being factors including loneliness and reported a weak correlation between time spent on social media and loneliness. He also found that age and gender were not significant factors. Of the 61 studies he reviewed the most common limitation was the student study population under analysis. He also found gender biases, with most studies focusing predominantly on females.

Social Anxiety

Social anxiety is considered a fear of interaction with other people that brings about feelings of self-consciousness, vulnerability and fear of being negatively judged which in turn leads to avoidance (Social Anxiety Institute, 2017). For this reason, it is unsurprising that the internet has been found to provide a safe space for anxiety sufferers due to its anonymity (Prizant-Passal, Shechner, & Aderka, 2016) and the ability to avoid face-to-face interactions (Fernandez, Levinson, & Rodebaugh, 2012). Social anxiety disorder (SAD) has been identified as a significant risk factor for reduced quality of life, substance abuse and depression (Dryman, Gardner, Weeks, & Heimberg (2016), Fehm & Wittchen, 2004; Ohayon & Schatzberg, 2010) with a reported 275 million sufferers worldwide (Our World in Data, 2017). Weidman et al., (2012) found that those suffering from social anxiety were shown to divulge more online than offline. One possible theory to explain this relationship is The Uses

and Gratification Theory (UGT) (Blumler & Katz, 1974), built on the premise that people use social media for 'w*hat they can get out of it'*. When feelings of loneliness and/or social anxiety arise we seek social connections online as this provides a safe place for sufferers to alleviate negative emotions, if only for a temporary period. This theory provides a theoretical framework to explain a correlation between SMU, loneliness and social anxiety. If this behaviour continues for a prolonged period and social face to face connections decline this can have a detrimental effect on our psychological well-being (Kross et al., 2013; Moreno, Jelenchick, & Breland, 2015).

Many studies have looked at the connection between social media use and social anxiety and found positive associations between the two (Aladwani & Almarzouq, 2016; Clayton, Osborne, Miller, & Oberle, 2013; Lee, 2015; Shaw, Timpan, Tran, & Joorman, 2015), with social anxiety seen to be a significant predictor of problematic social media use (Caplan, 2006; Lee-Won, Herzog, & Parks, 2015; Tokunaga, 2014). Contrary to these findings, other studies found negative associations with social media use and social anxiety (Antheunis, Schouten, & Krahmer, 2016; Fernandez, Levison, & Rodebaugh, 2012; Ramirez, Sumner, & Hayes, 2016; Rizvi, 2016). In a systematic review conducted by Dobrean and Păsărelu (2016), including 20 research papers, they found the majority of studies showed a positive association between social anxiety and SMU with only four papers highlighting the negative association between these two variables. One major limitation of the studies researched in this meta-analysis was the focus on only one social media platform - Facebook, excluding all other forms of social media such as Twitter, Instagram and Snapchat.

Most of the studies in this literature review reflect these findings that a large amount of past research focused predominantly on Facebook, and also the sample population has predominantly been college students. An extensive number of past research studies into social anxiety are grounded in the social compensation hypothesis (Gross, Juvonen, & Gable,

2002) which is built on the theory that individuals use social networking sites to compensate for shortfalls in their social skills. They deem internet-based interaction to be less threatening than face-to-face connection. Due to this preference, they tend to spend a disproportionate amount of time and effort on line socializing (Lee-Won, Herzog, & Park, 2015) which has also been linked to internet addiction (Weinstein, Dorani, Elhadif, Bukovza, & Yarmulnik, 2015). Whilst a large proportion of the research into social anxiety and SMU finds a positive association more research is needed to better understand the extend of this relationship across all social media platforms and age ranges.

The current study

Social media has become a fundamental part of our everyday lives, a means for many in maintaining human connection (Anderson & Jiang, 2018). Reportedly more common in young adults and teens, this technological outlet is seen as their primary means of communication in an ever changing, fast paced world. Whilst social media has the potential to benefit our psychosocial well-being, current research has also shown that prolonged use can be detrimental to ones' mental health, whether it exacerbates an existing issue or creates new negative thought patterns and emotions. Two emotional disorders linked to SMU that have been widely researched are social anxiety and loneliness. The cognitive behavioural approach could explain the relationship between this variables. Negative cognitions relating to the self or the world can lead to maladaptive dysfunctional behaviours such as social withdrawal. This can result in those suffering to turn to social media to still feel connected in some way. It is important that research is continued into the relationship between social media use, social anxiety and loneliness and the clinical implications of their relationship. All dependent (social media use - SMU) and independent (social anxiety, loneliness) variables in this study will be measured using self-report questionnaires with higher scores meaning

higher levels of the variable exist. This insight will help us gain a better understanding of the workings of the human mind and assist in the development of suitable clinical intervention practices and assessments. This current study aims to narrow the gaps in current literature on the relationship between loneliness, and SMU and social anxiety and SMU, while rectifying a number of limitations highlighted in previous research.

To summarise the literature to date, while many studies identified high SMU to correlate with high levels of loneliness (Liu & Baumeister, 2016; Song et al., 2014) or high levels of social anxiety (Lee-Won et al., 2015; Prizant-Passal, Shechner, & Aderk., 2016), other studies found SMU is linked with lower levels of loneliness (Brandtzaeg, 2012; Lou et al., 2012; Yang & Brown, 2013) and negatively associated with social anxiety (Riaz & Shahid, 2018; Sisman, Yoruk, & Eleren, 2013). This study also aims to identify any relative contributions loneliness and social anxiety make to SMU and if loneliness makes less of a prediction of SMU when we account for social anxiety, as proposed in previous literature (Caplan, 2006). Some of the limitations noted in previous research on SMU will be rectified. Previous research has been seen to focus primarily on college students, this study is open to all over the age of 18 yrs +, (no upper limit). Due to an increase seen in the age of social media user's (Pew Research Center, 2019), this current research is looking to identify if age is a significant predictor of SMU. As described above, research to date has focused primarily on Facebook use (Shaw, Timpnao, Tran, & Joorman, 2015; Kalpidou, Costin, & Morris, 2011), this study aims to address this and expand upon our current knowledge and include all forms of social media, which currently stands at over 3 billion users worldwide.

Three research questions will be addressed:

1. Do loneliness and social anxiety correlate with social media use (SMU)?
2. Does loneliness and social anxiety combined make a relative contribution to SMU?
3. Does age have any effect on SMU?

Considering the current literature it is hypothesized that:

1. Loneliness is correlated with SMU
2. Social anxiety is correlated with SMU
3. Social media use can be predicted by the relative contributions of loneliness and social anxiety
4. Age predicts SMU, above and beyond loneliness and social anxiety

Methods

Participants

The present study recruited participants through convenience sampling method by means of posts on the researchers own Facebook account along with the account of a social anxiety and loneliness support group on Facebook. Data was collected from 93 participants, with one participant excluded for failing to complete the social anxiety questionnaire, leaving 92 participants (N=92), with age ranging from 20-72, (M = 36.6, SD = 9.67). The total number of female participants (66.3%, N = 61) was twice that of males (33.7%, N = 31). They also had to be engaged in at least one form of social media such as Facebook, Instagram, Twitter or Snapchat, etc. All participants had to confirm they were over the age of 18 years, with no upper limit, and give full consent before proceeding with answering the questionnaire. No incentive was given for completion of the study.

Measures

Demographics: Participants were asked their gender and age.

Loneliness: For assessing loneliness, the UCLA Scale of Loneliness, Version 3 (Russell, 1996) was used (See Appendix B). The UCLA Scale of Loneliness measures an individual's subjective feelings of loneliness and social isolation. It is a valid and reliable questionnaire, tested and re-test reliability over a one year period (r = .73) with a co-efficient alpha in the range of .89 to .94. It consists of 20 items that assess how often a person feels disconnected from others. Using a rating scale (1=never, 4=always) participants were asked questions such as "How often do you feel part of a group of friends?" The positively worded questions (1, 5, 6, 9, 10, 15, 16, 19, 20) were reverse coded as higher values mean higher levels of loneliness. Average scores were determined. The Cronbach's Alpha for the present sample was .95.

Social Anxiety: The SAQ-30 self-report questionnaire (Caballo, Arias, Salazar, Irutia, & Hofmann, 2015) was used as a self-report measure of social anxiety in a broad range of social situations (Appendix C). It contains 30 items, each measured on a five item Likert scale and the higher the score the higher the level of anxiety present. An example of a statement on the questionnaire is as follows 'Complaining to the waiter about my food' and the participant has 5 options on how to respond, rating their stress, unease or nervousness in this situation. It ranges from 'not at all or very slightly' (1) to 'very high or extremely high' (5). There is a five factor structure within the SAQ-30 questionnaire - (1) Speaking in public/Talking with people in authority, (2) Interactions with the opposite sex, (3) Assertive expression of annoyance, disgust or displeasure, (4) Criticism and embarrassment, and (5) Interactions with strangers. Each subscale consists of six items distributed randomly throughout the questionnaire. There is a score for each subscale and an overall score for the questionnaire. The internal consistency estimates (Cronbach's α) of the SAQ-A30 for the current study was .94. The Cronbach's alpha for each subscale was as follows: speaking in public/talking with people in authority (.91), interactions with the opposite sex (.91), assertive expression of annoyance, disgust or displeasure (.88), criticism and embarrassment (.83), and interactions with strangers (.88).

Social Media Use: Lastly, the Social Networking Time Use Scale (SONTUS) was used to assess participant's time spent on social networking sites (Appendix D). The scale, developed by Olufadi (2016) comprises of 29 items measuring five factors, each representing different contexts where SNS are used (1.relaxation and free periods, 2. completing academic tasks, 3. public places, 4. stress related periods, 5.motives for use). All items fall on an 11-point Likert scale ranging from 1 – 'Not applicable to me during the past week' to 11 – 'I used it more than 3 times during the past week but spend more than 30 min each'. An example of an item in the questionnaire is 'When you need to reduce your mental stress'.

Component scores were combined to give a global score ranging from 5 to 23. Scores in the range of 5 - 9 were considered low users, scores in the range of 10-14 were considered average users, scores from 15 -19 were considered high users and lastly scores above 19 were considered extremely high users. Reliability, estimated with internal consistency in both the exploratory and confirmatory samples (Olufadi, 2016) was acceptable (Cronbach's a - .92 and .93). Structural validity was evaluated with a Principal Component Analysis (PCA) and Confirmatory Factor Analysis (CFA) on two large samples retrospectively (>1800). Cronbach's alpha for the current study was .89*. The Cronbach's alpha for each subscale was as follows: relaxation and free periods (.65), completing academic tasks (.67), public places (.72), stress related periods (.87) and motives for use (.57). The lower internal consistency scores for some of the subscales may be due to the lower number of questions considered in each subscale. Dall'Oglio et al., (2010) states that a Cronbach's alpha of 0.50 can be acceptable with short scales while Hinton, Brownlow, McMurray, & Cozens (2004) deem a Cronbach's alpha of between .05 to .07 to show moderate reliability.

*Note – An error was made in the transcribing of this scale with one question being omitted. However, the Cronbach's Alpha test for reliability using the 28 items highlights that high reliability was maintained (a = .89).

Design

A quantitative approach was taken in gathering data in this correlational, cross-sectional design study. This style of design was used to identify any correlation between our independent variables – loneliness, social anxiety and age and our dependent variable - social media use. For the regression analysis of our last two hypotheses the predictor variables are loneliness, social anxiety and age and the criterion variable is social media use (SMU). The study consisted of both male and female participants with all data collected at one single

point in time. Demographic information was collected on their age and gender. Questionnaires chosen were objective, systematic and repeatable. The questionnaires also allowed for larger sample sizes without extra cost to the researcher. Content validity was measured to unsure no unnecessary data was being asked of participants. As questionnaires have been used in numerous previously completed studies (Cecconello, Batistella, Wahl, & Wagner, 2013; Hampes, 2005; Kujath, 2011) strong reliability was maintained.

Procedure

Before this research study commenced ethical approval was granted by The National College of Ireland's ethics committee. No prior pilot study was necessary. Once approved, participants came to learn of this study through a Facebook post on the researcher's own Facebook account which outlined the purpose of the study, the approximate time required to complete the questionnaire (10-12 minutes) and a link to the google form where it could be found. Each form contained a consent form section (Appendix A), two demographic questions and three questionnaires (UCLA (Appendix B) – 20 items, SAQ-30 (Appendix C) – 30 items & SONTUS Scale (Appendix D) – 28 items), concluding with the debriefing sheet (Appendix E). The consent form outlined the purpose of the study, the benefits to society the study hopes to achieve, the potential risks/emotional distress the questionnaire may cause due to its sensitive nature and also the participants right to withdraw at any time before completion. Participants had to confirm they were over the age of 18 years and agree to participation by ticking a box provided at the bottom of the consent form before proceeding to the questionnaire section containing 80 questions in total. There were no time constraints in completing the questionnaire. All sections were headed, the demographic details (age and gender), UCLA scale, SAQ-30 and the SONTUS Scale. Apart from the demographic questions where they were asked to provide their age and gender, all other questions were

multiple choice or Likert scale style. Upon completion, they were required to press the submission button at the bottom of the screen which then brought them to the debriefing page (See Appendix E). The debriefing page included contact details of both the researcher and supervisor in case any participant required additional information along with contact details of a number of mental health organisations given the sensitive nature of the study. All data was collected in a confidential manner and no personal details were assigned to each submission. The questionnaires were completed through a google document, designed specifically for this study.

Ethical Considerations. As previously stated, ethical approval was granted by The National College of Ireland's ethics committee before commencement of this research. All Ethical Standards were considered before conducting this self-report questionnaire study.

Results

Descriptive statistics were collected on 92 participants who took part in this study with an age range of 20-72 (M=.36.36, SD= 9.67). Frequencies for gender are presented in Table 1 with the mean (M) and standard deviation (SD) for all continuous variables presented in Table 2. The mean score for social media use (M=8.35, SD= 2.61) indicates that participants were low users of social media.

Table 1

Descriptive data for the current study sample (N = 92)

Variable	Frequency	Valid Percentage
Gender		
Male	31	33.7
Female	61	66.3

Table 2

Descriptive statistics of all continuous variables

	Mean (95% Confidence Intervals)	Std. Error Mean	Median	SD	Range
Age	36.36 (34.37-38.32)	1.01	36	9.67	20 - 72
Total Loneliness	2.63 (2.59-2.68)	0.02	2.65	0.23	2.1- 3.3
Total Social Anxiety	93.33 (87.9-98.6)	2.74	93	26.27	30 - 148
Social Media Use	8.35 (7.84-8.87)	0.27	8	2.61	5 - 7

To test the first two hypotheses in this study Pearson Correlation coefficients were performed. The aim of the first hypothesis was to investigate the relationship between our independent variable (IV) – loneliness, and our dependent variable (DV) – social media use (SMU). Our second hypothesis aims to investigate the relationship between social anxiety (IV) and social media use (DV). A multiple hierarchical regression analysis was performed to test the last two hypotheses. Multiple regression was performed to determine the ability of loneliness and social anxiety to predict levels of SMU. Lastly, the aim of the fourth hypothesis was to determine the ability of age to predict levels of SMU above that already shared with loneliness and social anxiety. Preliminary analysis were conducted to ensure no violations of the assumptions of normality, linearity and homoscedasticity. Additionally, the correlations between the predictor variables included in the study were examined (Table 3). Correlations ranged from moderate to strong, between $r = -.19$, $p = .07$ and $r = .26$, $p = .01$. All predictor variables significantly correlated with SMU, with effects ranging from $r = .13$ to $r = -.31$. These results along with collinearity and VIF values of < 1.1 indicate no violation of multicollinearity (Tabachnick & Fidell, 2013) which indicates that the data was suitably correlated with the dependent variable for examination through multiple regression to be reliably undertaken.

Hypothesis 1 - Loneliness is correlated with SMU. Preliminary analyses were carried out to ensure there was no violation of the assumptions of normality, linearity, and homoscedasticity. Using a Pearson product-moment correlation coefficient no correlation was found between loneliness and SMU ($r = .13$, $n = 92$, $p = .21$, two-tailed). (Table 3). The findings indicate that the two variables share only 1.7% variance in common, demonstrating that loneliness is not associated with SMU.

Hypothesis 2 - Social anxiety is correlated with SMU. Preliminary analyses were carried out to ensure there was no violation of the assumptions of normality, linearity, and homoscedasticity. Using a Pearson product-moment correlation coefficient a positive correlation between social anxiety and SMU was found ($r = .21$, $n = 92$, $p = .05$, two-tailed). (Table 3). The findings indicate that the two variables share 4% variance, demonstrating that higher levels of social anxiety are associated with higher levels of SMU.

Table 3

Correlations between all continuous variables

Variables	1	2	3	4
1. Loneliness	1	.13	.26*	.08
2. Social Media Use	.13	1	.21*	-.31**
3. Social Anxiety	.26*	.21*	1	-.19
4. Age	.08	-.31**	-.19	1

Note: Statistical Significance: *p < .05; **p < .01; ***p < .001

Hypothesis 3 - SMU can be predicted by the relative contributions of loneliness and social anxiety. A hierarchical multiple regression was performed to investigate whether loneliness or social anxiety are significantly predictors of social media use, and whether the influence of social anxiety predicts variation above and beyond the variation in SMU already predicted by loneliness. Preliminary analyses were carried out to ensure there was no violation of the assumptions of normality, linearity and homoscedasticity. A priori power analysis was conducted for a multiple regression with two predictor variables using G*Power3. Based on the assumptions using a sufficient sample size using alpha of 0.05, a

power of 0.95, and a medium effect size ($F^2 = 0.15$) (Faul et al., 2013) the desired sample size is 89.

As previously stated, multicollinearity was unlikely to be an issue (Tabachnik & Fidell, 2013). Loneliness was entered in Block 1, explaining 2% of the variance in SMU, ($R^2 = 0.02$, $p = 0.21$). When social anxiety was added in Block 2 it explained 5% variance in SMU by the model as a whole, ($F(2, 89) = 2.35$, $p = 0.10$). Social anxiety explained an additional 3% of the variance in SMU after controlling for loneliness, (R^2 change = .033, ($F(1, 89) = 3.06$, $p = .08$). In the final model, neither of the variables were statistically significant predictors of SMU, independently or combined, social anxiety made more of a unique contribution to explaining variance in the model ($\beta = .19$, $p = .08$) relative to loneliness ($\beta = .08$, $p = .43$). When social anxiety was controlled for, the β value for loneliness dropped from $\beta = .13$ to $\beta = .08$ (Table 3), making less of a unique contribution to explaining variance in this model, which could be due in part to its sensitive relationship with social anxiety.

Table 4

Hierarchical Regression model predicting SMU

	R^2	Adj R^2	β	B	SE	CI 95% (B)
Block 1	.02	.01				
Loneliness			.13	1.5	1.18	-.85/3.85
Block 2	.05	.03				
Loneliness			.08	.95	1.21	-1.45/3.36
Social Anxiety			.19	.02	.01	-.003/.04

Note. R_2 = R-squared; Adj R_2 = Adjusted R-squared; β = standardized beta value; B = unstandardized beta value; SE = Standard errors of B; CI 95% (B) = 95% confidence interval for B; N = 92; Statistical significance: *p < .05; **p < .01; ***p < .001

Hypothesis 4 - Age predicts SMU, above and beyond loneliness and social anxiety. Hierarchical multiple regression was performed to investigate the ability of age to predict SMU above and beyond loneliness and social anxiety. Preliminary analyses were carried out to ensure there was no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity. There was no change to G-Power results. In Block 1, loneliness and social anxiety explained 5% of variance in SMU. In Block 2, the three predictor variables explained 13% of variance in SMU ($F(3, 88) = 4.50$, $p = .006$). Age explained an additional 8% of the variance in SMU after controlling for loneliness and social anxiety, (R^2 change = .08, ($F(1, 88) = 8.4$, $p = .005$). A model that includes age, social anxiety, and loneliness, significantly improves prediction of social media use. In the final model (Table 5) age was found to be the only significant predictor of SMU ($\beta = -0.80$, $p = .005$). Further exploratory analysis was also performed to determine the relationship between our predictor variable – age, and our criterion variable – SMU. A Pearson product-moment correlation coefficient was performed which found a moderate negative correlation between these variables, indicating that a decrease in age was associated with higher levels of SMU ($r = -.31$, $n = 92$, $p = .003$, two-tailed).

Table 5

Hierarchical Regression model predicting SMU

	R^2	Adj R^2	β	B	SE	CI 95% (B)
Block 1	.05	.03				
Loneliness			.08	.95	.08	-1.45 / 3.3
Social Anxiety			.19	.02	.19	-.003 / .04
Block 2	.13	.10				
Loneliness			.12	1.4	1.17	-.93 / 3.73
Social Anxiety			.12	.01**	.01	-.009 / .03
Age			-.30***	-.08***	.03	-.14 / -.03

Note. R^2 = R-squared; Adj R^2 = Adjusted R-squared; β = standardized beta value; B = unstandardized beta value; SE = Standard errors of B; CI 95% (B) = 95% confidence interval for B; N = 92; Statistical significance: *p < .05; **p < .01; ***p < .001

Exploratory analysis was conducted using the subscale scores of the SONTUS scale, related to measuring time spent on social media. Descriptive statistics were determined for each of the five factors included in the measure (Table 6). Results indicate that the current sample in this study use social media predominantly as a form of relaxation or in free periods.

Table 6

Descriptive statistics (SONTUS five subscale factors) N = 92

	Mean (95% Confidence Intervals)	Std. Error Mean	Median	SD	Range
Relaxation/ Free period	2.65 (16.4-18.33)	.13	2	1.21	1 - 6
Stress	1.79 (8.45-10.12)	.10	1.5	0.91	1 - 4
Motives	1.64 (7.12-8.24)	.07	2	0.66	1 - 3
Academic related	1.18 (6.58-7.75)	.05	1	0.51	1 - 4
Public places	1.08 (5.37-6.07)	.03	1	0.27	1 – 2

Exploratory analysis was also conducted using the subscale scores of the SAQ-30 questionnaire, related to measuring generalised or specific social anxiety. Descriptive statistics were determined for each of the five factors included in the measure (See Table 7). Results indicate the current sample of this study experience higher levels of social anxiety when criticised or feeling embarrassed (M = 19.90, SD = 5.24) followed closely by assertive expression of annoyance, disgust or displeasure (M = 19.51, SD = 6.29).

Table 7

Descriptive statistics (SAQ-30 five subscale factors) N = 92

	Mean (95% Confidence Intervals)	Std. Error Mean	Median	SD	Range
Speaking in public	18.28 (16.95-19.70)	.70	18	6.69	6 - 30
Interactions with opposite sex	18.47 (17.08-19.78)	.68	20	6.50	6 - 30
Assertive expression of annoyance, disgust or displeasure	19.51 (18.22-20.86)	.67	20.5	6.29	6 - 30
Criticism and embarrassment	19.90 (18.79-20.93)	.55	21	5.24	6 - 30
Interactions with Strangers	17.17 (15.85-18.41)	.64	17	6.27	6 – 30

Discussion

Social Media Use (SMU) has been shown in many studies to have a negative impact on one's mental health (Blease, 2015; Donnelly & Kuss, 2016). The present study sought to identify if a number of these mental health issues correlated with SMU and if these variables had a mediating effect on each other. The present study also looked to assess whether age had an influence on SMU with the current sample ranging in age from 20-72 years. Derived from current literature, four hypotheses were proposed.

The results from this study do not support the first hypothesis which proposed that loneliness correlated with SMU. No relationship between loneliness and SMU was found which is line with several prior studies (Brandtzaeg, 2012; Lou et al., 2012; Yang & Brown, 2013). One possible interpretation of the study's results behind the no significant association between loneliness and SMU is that social media may have the potential to be as successful a form of social support as face to face interaction (Keating, Hendy, & Can, 2016; Lee, Noh, & Koo, 2013). A strong social support group has been shown to predict subjective well-being (Kim & Lee, 2011), therefore preventing feelings of loneliness from arising.

Perlman and Peplau (1998) once stated that loneliness results from differences between the levels of desire for social relationships and the availability of relationships. In an increasingly busy modern world, it could be suggested that social media gives individuals more access to staying connected with friends when time does not allow for face to face interactions, resulting in greater psychological well-being (Wang, Jackson, Gaskin, & Wang, 2014). While Nowland, Necka and Cacioppo (2018) did find a correlation between loneliness and SMU they also suggested that SMU can strengthen our existing connections and in turn reduce loneliness but if used as a substitute for real-life interactions it can have negative implications. Pittman (2015) found the more students used social media, the more reported loneliness decreased. A correlation between loneliness and SMU may be

determined upon one's motives for use whether it be a need to withdraw from the social world or the quality of communication. In reviewing the subscale scores for the SMU scale (SONTUS scale) , of the five factors included in the assessment (relaxation/free period, academic related period, public places, stress and motives) relaxation/free period had the highest mean score (M = 17.35). This indicates that the population of the current study uses social media predominantly as a form of relaxation or in their free time.

While Savci (2016) found a positive correlation between loneliness and SMU they reported that the amount of time spent on social media is an important factor in determining loneliness. In the current study, participants were classed as low social media users with the recommended daily average reported to be 30 minutes to maintain well-being (Hunt, Marx, Lipson, & Young, 2018). As previously stated, the main reason highlighted for social media use in our current population was for relaxation or in free periods, suggesting if used for the right reasons, social media has the potential to maintain psychosocial well-being, modulate negative moods (Morahan-Martin & Schumacher, 2003) and deter loneliness. Several studies found that how an individual uses social media is more critical to their mental health over the quantity of time spent online (Feinstein et al., 2013; Reinecke & Trepte, 2014).

The results of this study support the second hypothesis which proposed that social anxiety correlated with SMU. A marginally small positive relationship was found between social anxiety and SMU indicating that high levels of social anxiety are associated with high levels of SMU. These findings support many previous studies that link social anxiety to SMU (Aladwani & Almarzouq, 2016; Clayton, Osborne, Miller, & Oberle, 2013; Lee, 2015; Shaw, Timpan, Tran, & Joorman, 2015; Woods & Scott, 2016). Possible explanations for this positive relationship include the social compensation hypothesis (Gross, Juvonen, & Gable, 2002) which suggests that individuals suffering with social anxiety use social media to compensate for their limited face to face exchanges. The Uses and Gratification Theory

(UGT) (Blumler & Katz, 1974) also offers a theoretical structure to rationalise these findings. This theory proposes that an individual is driven to use social media by their own needs and desires so when negative emotions arise, such as social anxiety, they seek out communication with others online in the form of SNS's as they feel less vulnerable and have more control over their own self-presentation (Leary & Kowalski, 1997).

Indian & Grieve (2014) suggest that SMU provides the benefit of perceived social support for socially anxious individuals. In review of the subscale scores for the measuring social anxiety (SAQ-30 scale) the scale had five subtypes indicating the specific situation the individual feels most anxious. Of the five subtypes (speaking in public/talking with people in authority, interactions with the opposite sex, assertive expression of annoyance, disgust or displeasure, criticism and embarrassment, interactions with strangers) feelings of criticism and embarrassment (M = 19.90, SD = 5.24) were found to cause the highest level of social anxiety in our current sample followed closely by assertive expression of annoyance, disgust or displeasure (M = 19.51, SD = 6.29). For fear of negative evaluation in social situations socially anxious individuals can revert to using maladaptive coping strategies (Read, Clark, Rock, & Coventry, 2018), one of which could be an avoidance behaviour such as social media use. Social media platforms provide individuals with a safe environment where they have more control over their reactions and avoid some of their greatest fears, embarrassment and criticism.

The third hypothesis in this study was performed to examine whether variation in social anxiety predicts variation in SMU above and beyond the variation already predicted by loneliness, as social anxiety and loneliness correlated. The current research found no statistically significant relationship between loneliness, social anxiety and SMU. While social anxiety made more of a unique contribution to explaining SMU, loneliness was seen to make less of a unique contribution due in large part to its relationship with social anxiety.

While these findings cannot provide full support for a previous study undertaken by Caplan (2006) who found that social anxiety causes a spurious association between loneliness and SMU, it is relevant to note our findings highlight the need for further research into the sensitive relationship between social anxiety and loneliness (Lim et al., 2016). It is also important to note that the results of the social anxiety subscales (SAQ-30 scale) could also explain the non-significant loneliness score in this current sample of the population. The subtypes of the social anxiety scale (SAQ-30) with the lowest anxiety scores involved speaking in public/talking with people in authority, interacting with the opposite sex and interacting with strangers, indicating that our sample of population feel generally less socially anxious in face to face interactions.

Lastly, the fourth hypothesis investigated whether age was a significant predictor of variance in SMU, above and beyond the variation already predicted by loneliness and social anxiety. This hypothesis was formulated to identify if the age range of the current sample of 20-72 years highlighted any significant prediction of SMU. Results from this current study support the hypothesis with age found to be a significant predictor of SMU, over and above social anxiety and loneliness. An additional correlational analysis on the current sample also indicated that a decrease in age was associated with higher levels of SMU. These findings are in accordance with The Pew Research Centre (2018), who reported the biggest users of social media are aged between 18-29 years of age. This is evident in our current study.

Implications

Findings from this current research study have a number of implications. While this study was a relatively small sample size its findings are no less significant for opening suggestions for future research. The current research identified the sensitive relationship between social anxiety and loneliness, future research looking at loneliness and social media

should take into account any potential mediating variables that may skew a true representation of this relationship. Our first hypothesis in this study also found no significance between loneliness and SMU, suggesting that SMU may have the potential to deter feelings of loneliness from arising. Future research is warranted on the positive impact social media use (dependent on usage) can have on maintaining an individual's well-being, particularly at a time where social media is now used as a regular form of communication.

It is important to address the real world implications the positive affects SMU can have on avoiding loneliness as it is linked to many adverse health outcomes (Shankar, McMunn, Demakakos, Hamer, & Steptoe, 2017) and diminished longevity (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015). In the UK they estimate that people who experience high levels of loneliness cost the economy over £1.8 billion a year (Office for National Statistics, 2018) with younger generations experiencing these negative emotions on the increase (Beutel et al., 2017; Polack, 2018). It is also important to highlight the prevalence of anxiety disorders in our economy. These disorders have been shown to cost the EU €74.4 billion annually (Olesen et al., 2012) with more than 275 million suffers worldwide. Anxiety is now considered to be the world's biggest mental health problem (Our World in Data, 2017). While this study only highlights a marginally small positive correlation between social anxiety and SMU these findings still warrant further research. The findings in this current study could be explained by the individual's motivation for using this alternative form of social interaction whether it is to avoid negative emotions such as embarrassment or criticism or if it is used to keep connections alive. It is therefore important for society to continue research into the complexity of the relationship between loneliness, social anxiety and SMU while considering any other potential mediating variables that may alter their relationship.

Identifying risk factors such as age, quantity of time spent online, quality of communication and amount of face to face interaction will help develop a clearer understanding of the dynamic relationship between SMU, loneliness and social anxiety. In accounting for all these variables more accurate findings can be used to educate clinical and community practices.

Strengths

One of the stronger points of the study was that it included a more diverse age range of the general population which allows for better generalisability of results. A vast amount of previous research in this area of psychology focused predominantly on college students (Shaw, Timpano, Tran, & Joormann, 2015; Thomas, Orme, & Kerrigan, 2020). All of the scales used in this study (SONTUS, UCLA & SAQ-30) are highly reliable and valid scales used in research with these questionnaires being anonymous it avoids social desirability bias from respondents. The quantitative design approach of the study also allows for easy replication and avoidance of bias when collecting and analysing data as each step is standardized.

Limitations

Limitations of this study should be noted for future researchers in this field. The cross-sectional design approach used in the study could suggest that any relationships found in this study are temporal as all data was collected at one single point in time (Prot & Anderson, 2013). A longitudinal/experimental study would be more beneficial in future studies to obtain causal relationships of our variables, with less reliance on self-report questionnaires. Self-report questionnaires on time spent on social media have been known to lead to under or overestimated measures of time spent on SNS's. As females represented twice that of males (3:2 ratio) in the current study a gender bias could be suggested, future

research should look to balance the gender equation. Lastly, one question was omitted in error on the SONTUS scale which pertained to measuring social media use. This however did not have an impact on the scale's reliability, which maintained a high Cronbach's alpha score (a = .89).

Conclusion

While this current study only found a marginally small positive relationship between social anxiety and SMU it still has important implications for clinical practice. An individual's daily use of social media may be an important risk factor when assessing a patient with anxiety symptomology. Identifying this will help clinicians gain a better understanding of the patients habits and also help in devising suitable treatment programs. While this study did not find a correlation between loneliness and SMU it still has the potential to support a lesser researched area around the benefits SMU can have on an individual's psychosocial well-being, when used in a balanced way. It leads us to question whether concerns regarding social media use are somewhat misplaced. The current study found the most common reason for using social media in our sample was for relaxation/free periods, suggesting it can be used in a positive way. Continuing research into the cognitive predictors of negative outcomes of social media use and the sensitive relationship some of these variables have on each other is also needed. Gaining more knowledge and understanding of our relationship with social media can guide better mental health programs, particularly for the younger generation who don't know a life without this form of communication now.

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Appendices

Appendix A

Consent Form

Researcher name: **Eleanor Aspell**

I am inviting you to participate in this research project which is being carried out by Eleanor Aspell as part of her final year dissertation project in NCI. Participation is voluntary.

PURPOSE OF THE STUDY

The study is designed to investigate The Relationship between Loneliness and Social Anxiety and college students social media use.

PROCEDURES

If you agree to participate, this will involve completing the questionnaire than will follow. You will be required to read a number of multiple choice questions which should take roughly 12 minutes to complete.

POTENTIAL RISKS AND DISCOMFORTS

While the risks are minimal, due to the sensitive nature of the topic if you find this process distressing, I can only advise that you do not continue. The questionnaire has been designed to cause minimal stress in completing and no personal details will be asked to be provided.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

This study is being undertaken to develop a deeper understanding of the link to Loneliness, social anxiety and social media. The aim of the study is to identify any significant correlations between a person's psychological well-being and internet exposure. This will help us in developing better intervention programs for those at risk of the potential effects of excessive internet exposure.

CONFIDENTIALITY AND DATA PROTECTION

No information obtained from me during this research can be identified. This will be done by a coding procedures. The data will be kept in an encrypted file only held in the researchers computer drive. The data storage will be held in accordance with NCI's policy.

PARTICIPATION AND WITHDRAWAL

You can choose whether or not to be in this study. If you volunteer to be in this study, you may withdraw at any time before completing the questionnaire without consequences of any kind. You may also refuse to answer any questions you do not want to answer. There is no penalty if you withdraw from the study.

RIGHTS OF RESEARCH SUBJECTS

The National College of Ireland Research Ethics Committee has reviewed the researcher's request to conduct this project. If you have any concerns about my rights in this study, you can contact TBC

I agree to participate in Eleanor Aspell's research study.

The purpose and nature of the study has been explained to me in writing.

I am participating voluntarily.

I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating.

I understand that anonymity will be ensured by not being asked to submit any of my personal details

At the conclusion of my participation, any questions or concerns I have will be fully addressed.

I may withdraw from this study at any time, and may withdraw my data at the conclusion of my participation if I still have concerns.

I can confirm I am over the age of 18 and agree to the above terms of participating in this study

Appendix B

UCLA questionnaire

Using a 4-point rating scale (1= never; 4 = always), participants answer 20 questions.

UCLA questionnaire

1. How often do you feel that you are "in tune" with the people around you? 1 2 3 4
2. How often do you feel that you lack companionship? 1 2 3 4
3. How often do you feel that there is no one you can turn to? 1 2 3 4
4. How often do you feel alone? 1 2 3 4
5. How often do you feel part of a group of friends? 1 2 3 4
6. How often do you feel that you have a lot in common with the people around you? 1 2 3 4
7. How often do you feel that you are no longer close to anyone? 1 2 3 4
8. How often do you feel your interests & ideas are not shared by those around you? 1 2 3 4
9. How often do you feel outgoing and friendly? 1 2 3 4
10. How often do you feel close to people? 1 2 3 4
11. How often do you feel left out? 1 2 3 4
12. How often do you feel that your relationships with others are not meaningful? 1 2 3 4
13. How often do you feel that no one really knows you we11? 1 2 3 4
14. How often do you feel isolated from others? 1 2 3 4
15. How often do you fee1 you can find companionship when you want it? 1 2 3 4
16. How often do you feel that there are people who really understand you? 1 2 3 4
17, How often do you feel shy? 1 2 3 4
18. How often do you feel that people are around you but not with you? 1 2 3 4
19. How often do you feel that there are people you can talk to? 1 2 3 4
20. How often do you feel that there are people you can turn to? 1 2 3 4

Appendix C

SAQ-30 Questionnaire

LEVEL OF UNEASE, STRESS OR NERVOUSNESS:
Not at all or very slight 1 / Slight 2 / Moderate 3 / High 4 / Very high or extremely high 5

Please rate all the items and do so honestly; do not worry about your answer because there are no right or wrong ones. Thank you very much for your collaboration.

1. Greeting someone and being ignored 1 2 3 4 5
2. Having to ask a neighbour to stop making noise 1 2 3 4 5
3. Speaking in public 1 2 3 4 5
4. Asking someone attractive of the opposite sex for a date 1 2 3 4 5
5. Complaining to the waiter about my food 1 2 3 4 5
6. Feeling watched by people of the opposite sex 1 2 3 4 5
7. Participating in a meeting with people in authority 1 2 3 4 5
8. Talking to someone who isn't paying attention to what I am saying 1 2 3 4 5
9. Refusing when asked to do something I don't like doing 1 2 3 4 5
10. Making new friends 1 2 3 4 5
11. Telling someone that they have hurt my feelings 1 2 3 4 5
12. Having to speak in class, at work, or in a meeting 1 2 3 4 5
13. Maintaining a conversation with someone I've just met 1 2 3 4 5
14. Expressing my annoyance to someone that is picking on me 1 2 3 4 5
15. Greeting each person at a social meeting when I don't know most of them 1 2 3 4 5
16. Being teased in public 1 2 3 4 5
17. Talking to people I don't know at a party or a meeting 1 2 3 4 5
18. Being asked a question in class by the teacher or by a superior in a meeting 1 2 3 4 5
19. Looking into the eyes of someone I have just met while we are talking 1 2 3 4 5
20. Being asked out by a person I am attracted to 1 2 3 4 5
21. Making a mistake in front of other people 1 2 3 4 5
22. Attending a social event where I know only one person 1 2 3 4 5
23. Starting a conversation with someone of the opposite sex that I like 1 2 3 4 5
24. Being reprimanded about something I have done wrong 1 2 3 4 5
25. While having dinner with colleagues, classmates or workmates, being asked to speak on behalf of the entire group 1 2 3 4 5
26. Telling someone that their behaviour bothers me and asking them to stop 1 2 3 4 5
27. Asking someone I find attractive to dance 1 2 3 4 5
28. Being criticized 1 2 3 4 5
29. Talking to a superior or a person in authority 1 2 3 4 5
30. Telling someone I am attracted to that I would like to get to know them better 1 2 3 4 5

Appendix D

SONTUS Scale

Likert Scale marking system
1 = if a respondent select the Likert scale 1–3.
2 = if a respondent select the Likert scale 4– 6.
3 = if a respondent select the Likert scale 7–9.
4 = if a respondent select the Likert scale 10 or 11.

1 = Not applicable to me during the past week.
2 = I never used it during the past week.
3 = I used it once during the past week but spend less than 10 min.
4 = I used it once during the past week but spend between 10 and 30 min.
5 = I used it once during the past week but spent more than 30 min.
6 = I used it between 2 and 3 times during the past week but spend less than 10 min each time.
7 = I used it between 2 and 3 times during the past week but spend between 10 and 30 min each time.
8 = I used it between 2 and 3 times during the past week but spent more than 30 min each time.
9 = I used it more than 3 times during the past week but spend less than 10 min each time.
10 = I used it more than 3 times during the past week but spend between 10 and 30 min each time.
11 = I used it more than 3 times during the past week but spent more than 30 min each time.

Kindly use the scale below to indicate how often you always use the social networking sites like Facebook, Instagram, WhatsApp, Twitter, Myspace, Pinterest etc., during the past week in the following situations and places:

1 When you are at a seminar/workshop or training program
2 When you are at home sitting idly
3 When you need to reduce your mental stress
4 When you go to the stadium to watch football, basketball etc.
5 When you are doing school or job-related assignment at home
6 When you are waiting for someone (e.g., friends) either in their house or at a pre-arranged place
7 When you are listening to music, radio, religious lectures etc.
8 When you have gone through a lot of stress
9 When you are in a meeting
~~10 When you are in the class receiving lecture~~ *(omitted in error)*
11 When you need to maintain contact with existing friends
12 When you are in bed about to sleep
13 When you are reading in the library for academic purpose e.g., recommended text for class
14 When you are at a place to repair your car, house appliances, etc.
15 When you need to reduce your emotional stress
16 When you want to reduce the pressure of your daily routines
17 When you are at a social gathering like wedding ceremony, birthday party, reception etc.
18 When you need to communicate with your families and friends

19 When you are sitting in a religious place (e.g., church, mosque) and activities like sermon or prayer is yet to start
20 When you need to find out more about people you met offline
21 When you are in the company of friends/family/colleagues having fun
22 When you are watching TV, news, football, films, sports, etc.
23 When you go to the cinema house to watch movie(s)
24 When you are a passenger in a car/bus/train for at least 2 min
25 When you need to find people you haven't seen for a while
26 When you are waiting for your boss in her office for at least 2 min when she is not attending to you
27 When you are trying to forget your financial challenges
28 When you are online doing school or job-related works e.g., project, homework
29 Watching academic-related video lectures or those related to your job

In scoring the SONTUS, five component scores are derived. The components scores are summed to produce a global score that ranges from 5 to 23. This approach is in line with the results of our confirmatory factor analysis, which reveals a 5 first order factors with a 1 second-order factor as the best model for the SONTUS construct.

Coding Instruction: each and every items in SONTUS is coded as follows:
1 = if a respondent select the Likert scale 1–3.
2 = if a respondent select the Likert scale 4– 6.
3 = if a respondent select the Likert scale 7–9.
4 = if a respondent select the Likert scale 10 or 11.

Component 1: relaxation and free periods.

Sum of items 2, 6, 7, 12, 14, 21, 22, 24 and 26 scores	Component 1 score
9–12	1
13–16	2
17–20	3
21–24	4
25–28	5
29–32	6
>32	7

Component 2: academic-related periods

Sum of items 1, 5, 10, 13, 28, and 29 scores	Component 2 score
6–9	1
10–13	2
14–17	3
18–21	4
>32	5

Component 3: public-places-related use.

Sum of items 4, 9, 17, 19, and 23 scores	Component 3 score
5–8	1
9–12	2
13–16	3
17–20	4

Component 4: stress-related Periods.

Sum of items 3, 8, 15, 16, and 27 scores	Component 4 score
5–8	1
9–12	2
13–16	3
17–20	4

Component 5: motives for use.

Sum of items 11, 18, 20, and 25 scores	Component 5 score
4–7	1
8–11	2
>11	3

Global SONTUS score: sum of the five component scores: _____

Interpretation:

An individual with a global score that ranges from 5 to 9 is regarded as low user of SNSs.

An individual with a global score that ranges from 10 to 14 is regarded as average user of SNSs.

An individual with a global score that ranges from 15 to 19 is regarded as high user of SNSs.

An individual with a global score that is more than 19 is regarded as extremely high user of SNSs.

Appendix E

De-Briefing Form

Thank you for participating in this study.

If you have questions about my research or the questionnaire, please do not hesitate to contact me at x15012042@student.ncirl.ie. Alternatively, you can reach out to my academic supervisor at (TBC)

Useful numbers

The Samaritans:
116 123 (24-hour free phone helpline)
text: 087 260 9090 (standard rates apply)
email: jo@samaritans.ie

GROW:
Operates over 100 weekly support groups nationwide. The exact location of these groups can be found by phoning their info line at 1890-474-474

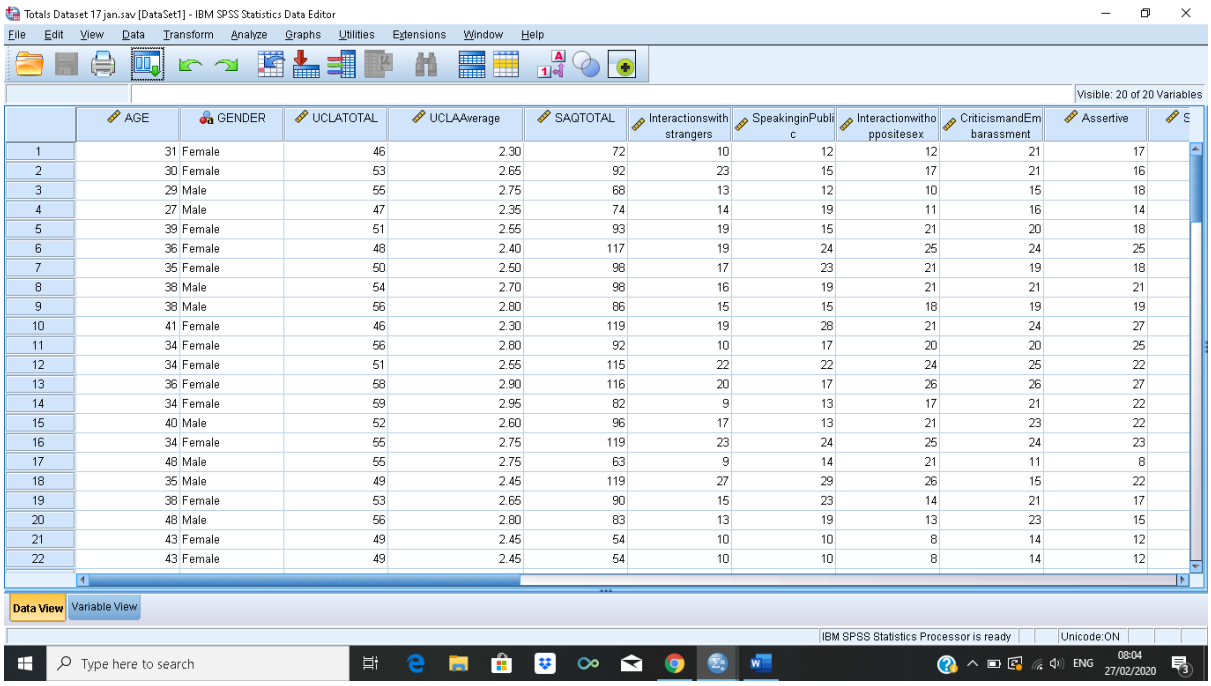
Pieta House:
1800 247 247

SOS (suicide or survive):
http://www.suicideorsurvive.ie
Provide workshops in promoting well-being, in particular to people who have come through an emotional crisis.

Regards,
Eleanor

Appendix F

Screenshot of SPSS dataset



Totals Dataset 17 jan.sav [DataSet1] - IBM SPSS Statistics Data Editor

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Visible: 20 of 20 Variables

	AGE	GENDER	UCLATOTAL	UCLAAverage	SAQTOTAL	Interactionswith strangers	SpeakinginPublic	Interactionwithoppositesex	CriticismandEmbarassment	Assertive	S
1	31	Female	46	2.30	72	10	12	12	21	17	
2	30	Female	53	2.65	92	23	15	17	21	16	
3	29	Male	55	2.75	68	13	12	10	15	18	
4	27	Male	47	2.35	74	14	19	11	16	14	
5	39	Female	51	2.55	93	19	15	21	20	18	
6	36	Female	48	2.40	117	19	24	25	24	25	
7	35	Female	50	2.50	98	17	23	21	19	18	
8	38	Male	54	2.70	98	16	19	21	21	21	
9	38	Male	56	2.80	86	15	15	18	19	19	
10	41	Female	46	2.30	119	19	28	21	24	27	
11	34	Female	56	2.80	92	10	17	20	20	25	
12	34	Female	51	2.55	115	22	22	24	25	22	
13	36	Female	58	2.90	116	20	17	26	26	27	
14	34	Female	59	2.95	82	9	13	17	21	22	
15	40	Male	52	2.60	96	17	13	21	23	22	
16	34	Female	55	2.75	119	23	24	25	24	23	
17	48	Male	55	2.75	63	9	14	21	11	8	
18	35	Male	49	2.45	119	27	29	26	15	22	
19	38	Female	53	2.65	90	15	23	14	21	17	
20	48	Male	56	2.80	83	13	19	13	23	15	
21	43	Female	49	2.45	54	10	10	8	14	12	
22	43	Female	49	2.45	54	10	10	8	14	12	

Data View Variable View

IBM SPSS Statistics Processor is ready Unicode:ON

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