Age, Gender, Self-Esteem, and Self-Monitoring: A Mediated Model of Mobile Phone Use and its Effects on Psychological Well-Being

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AGE, GENDER, SELF-ESTEEM, AND SELF-MONITORING

Declaration

I hereby declare this document as being submitted as partial fulfilment of the requirements for the Bachelor of Psychology (Honours) at CQUniversity. I further declare that the contents are my own work, are 11,711 words in length, and have not been submitted previously for the purpose of assessment.

Signed: ____________________________   Date: ________________________, 2011
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Abstract

A path analysis study was conducted to assess the direct and indirect effects of an individual’s age, gender, level of self-esteem, level of self-monitoring, and mobile phone use on psychological well-being. A questionnaire was issued to 46 males and 83 females, ranging from 18-54 years of age. The questionnaire comprised the Rosenberg Self-Esteem Scale (RSE) (Rosenberg, 1989), the Self-Monitoring Scale (SMS) (Snyder, 1974), the Mobile Phone Problematic Use Scale (MPPUS) (Bianchi & Phillips, 2005), and the Depression Anxiety and Stress Scales-21 (DASS-21) (Lovibond & Lovibond, 2005).

Findings from the analyses indicated that there were no significant gender differences across any of the study’s major variables. Younger participants with lower levels of self-esteem and higher levels of self-monitoring exhibited more problematic mobile phone use and subsequently lower levels of psychological well-being. Self-esteem had significant direct ($\beta = -.33$) and indirect ($\beta = -.19$) effects on psychological well-being mediated by problematic mobile phone use ($\beta = .20$). Self-monitoring had a significant indirect effect ($\beta = .27$) on psychological well-being mediated by problematic mobile phone use ($\beta = .20$).

The findings from this study have important implications for individuals, policy makers, and clinicians, assisting them to identify, educate, and treat people who experience reduced psychological well-being as a direct result of problematic mobile phone use.
Chapter One

Introduction

From the first mobile phone call, placed in 1973 by Motorola technician Martin Cooper, this form of technological communication has become an integral part of today’s social landscape (Geser, 2006; Marples, 2008). In 2002 the amount of mobile phone subscriptions overtook landlines for the first time (Srivastava, 2005) and by 2010 there were reportedly over five billion mobile phone connections worldwide (BBC News, 2010). Because of this saturation the mobile phone has become a stable and integral part of many people’s lives, increasingly being used to maintain, sustain, manage, and enhance their professional and private social environments (Oksman & Rautiainen, 2002). One study found that most of the participants considered their phones an indispensable part of their lives because they use it for both social and business purposes (Platzer, Petrovic, Rauch, & Brunnhofer, 2010). Mobile phones have developed from mere communication devices into portable computers capable of wireless Internet connection, entertainment via games, social connection through online social networks, diaries, and with the alarm clock function a person’s interactions with their phones can begin from their first waking moment (Hulme & Peters, 2004; Oksman & Rautiainen). Mobile phones have also had profound effects on the societal structures of many cultures around the world (McGuigan, 2005). This technology not only changes the way we communicate but also has an impact on social identities, relationships and behaviours, with an individual’s sense of belonging not restricted solely to the culture in which they reside (Plant, 2002; Srivastava, 2005). Due to the mobility of this technology there has been a gradual encroachment of private conversations into the public arena blurring previously private and public social distinctions (Aoki & Downes, 2003; Love & Kewley, 2005). This has led to new social codes, norms, and etiquette being developed to cope with this behaviour. For example, many society’s norms dictate the socially acceptable
Due to the increases in mobile phone ownership there has been growing interest and research regarding the positive and negative impacts of the mobile phone on societies and individuals. It has been found that mobile phones can be a positive educational aid (Hulme & Peters, 2004; Prensky, 2004), and a useful therapeutic tool (Boschen & Casey, 2008; Preziosa, Grassi, Gaggioli, & Riva, 2009). For instance, one study found that mobile phones can be a successful way of charting moods in adolescents and showed a higher compliance rate than with standard pen and paper methods (Matthews, Doherty, Sharry, & Fitzpatrick, 2008). It has also been seen that mobile phones can reduce anxiety for parents and children by allowing them to be in contact, thereby increasing feelings of security (Oksman & Rautiainen, 2002; Ribak, 2009). Negative aspects of phone use have also received attention and include cyberbullying (Tokunaga, 2010), social exclusion (Smith & Williams, 2004), driving while on the phone (Haigney, Taylor, & Westerman, 2000), and debt and theft (Walsh, White, & Young, 2008). Some have argued that use of text messaging has reduced the ability to interact in face-to-face situations (Srivastava, 2005), whereas others have found that it can enhance social communication (Walsh, White, & Young). Mobile phones have also been shown to increase feelings of connectedness and belonging and to reduce feelings of loneliness by increasing an individual’s social support network (Madell & Muncer, 2007; Walsh, White, & Young, 2009; 2010). However, if an individual who relies on their phone for social and psychological reasons loses their phone, for example, this can lead to feelings of isolation, stress, and anxiety (Geser, 2006; Plant, 2002; Solutions Research Group, 2008). The phenomenon of being anxious about losing a phone, running out of credit, losing battery power, or being out of signal range has been named by some media commentators as “Nomophobia” (Barney, 2008). “Nomophobia” is described as a form of behavioural addiction
involve problematic use of mobile phones and the resulting tolerance and withdrawal like physical and psychological symptoms resulting from this over reliance.

This type of modern addictive behavioural phenomenon has been the focus of recent research specifically regarding the problematic use of mobile phones and the effect of this behaviour on an individual’s psychological well-being (for example, Bianchi & Phillips, 2005). For the purpose of this study, problematic mobile phone use is defined as the degree to which the overuse of a mobile phone affects individuals’ psychological and behavioural functioning, and psychological well-being is defined as the degree to which an individual reports levels of the negative emotional states of depression, anxiety, and stress. Walsh, White, and Young (2007) found that those who showed problematic levels of mobile phone use also showed addictive symptoms such as withdrawal, salience, feelings of unease, and feelings of having no control over their usage levels when they were either unable to use their phones or did not realise how much they were using their phones until they received their bill. Furthermore, a study in Taiwan showed that symptoms of problematic phone use were significantly associated with functional impairment; time spent on the phone and the amount of text messages made (Yen, Tang, Yen, Lin, Huang, Liu, & Ko, 2009). Walsh, White, and Young (2008) proposed that phone ownership and use could, however, be a positive influence even if used excessively. According to this study positive peer approval can be sought and gained thereby improving one’s feelings of self-worth. However, this study found that if an individual’s self-worth becomes intrinsically linked to mobile phone ownership and use, any loss of the actual phone, having no credit or battery power, or social exclusion from others with phones can have negative psychological impacts. This can be even more prevalent in a cohort where peer pressure, social identity, and group norms to belong are at their strongest, i.e., during adolescence and young adulthood (McLean & Anderson, 2009; Walsh, White, & Young, 2008, 2010). If the group norm of a cohort is to use mobile phones
to develop and maintain relationships and enhance their feelings of belongingness, individuals may not develop other methods of fostering social contact so the loss of phone access could lead to stress and anxiety. This in turn can make the over use of the phone very hard to control (Walsh, White, Cox, & White, 2011).

With respect to problematic mobile phone use in Australia, Bianchi and Phillips (2005) carried out a quantitative study using extraversion, self esteem, neuroticism, age, and gender as predictor variables of problematic mobile phone use. To measure problematic mobile phone use they devised and validated a new scale they named the Mobile Phone Problem Use Scale (MPPUS) (2005). Data from this measure revealed that the younger the phone users’ age, the lower their self-esteem, which for the purpose of the current study is defined as an individual’s self evaluation of their general feelings of value or worth, and in turn the higher the level of extraversion reported by the phone user the higher their reported levels of problematic phone use. Carrying on from Bianchi and Phillips’ research, Takao, Takahashi, and Kitamura (2009) investigated whether an individual’s gender, approval motivation, feelings of loneliness, and level of self monitoring could predict problematic phone use. For the purpose of the current study self-monitoring is defined as the degree to which individuals monitor the social cues from the behaviours of others and adapt their own behaviours to more closely match others’ behaviours. Of interest for the current study was their use of the MPPUS (Bianchi & Phillips, 2005) combined with the Self Monitoring Scale designed by Mark Snyder (1974). Takao et al. (2009) proposed high levels of self monitoring would be a strong predictor of problematic levels of phone use. This hypothesis is logical as Bianchi and Phillips found that a high level of extraversion was associated with problematic phone use and self-monitors have been shown to exhibit high levels of extraversion, are highly social in nature and other directedness as they use the social cues of others to adapt their social behaviour. It is plausible therefore, that those individuals are more likely to
exhibit problematic mobile phone use in order to gather such cues (Snyder & Gangestad, 1986). Bianchi and Phillips (2005) also found that females, compared to males, scored higher on the MPPUS. This supports previous literature regarding mobile phone addiction in that females exhibit a more emotional attachment to their phones as they use them more for social relationships and to maintain friendships. Males on the other hand, use phones for more business and functional purposes so develop less of an attachment (Geser, 2006). Neither findings presented by Bianchi and Phillips (2005) and Takao et al. (2009) examined in any detail whether problematic mobile phone use had any mediating effect between an individual’s personality factors and their psychological well-being. Therefore the current study’s aim is to examine whether an individual’s age, gender, level of self-esteem, and level of self-monitoring can predict problematic mobile phone use and, if so, whether this problematic use in turn has any negative effect on an individual’s psychological well-being as measured by the 21-item Depression Anxiety Stress Scales (DASS-21) (Lovibond & Lovibond, 2004).

1.1 Age, Gender, Problematic Mobile Phone Use, and Psychological Well-Being

The DASS-21 measures a person’s current levels of feelings of depression, anxiety, and stress. Previous research examining age differences in participants’ self-reported levels of these psychological difficulties have shown mixed quantitative results. Some studies have found younger compared to older participants reported lower levels of depression and anxiety (Christensen, Jorm, MacKinnon, Korten, Jacomb, Henderson, & Rodgers, 1999; Erskine, Kvavilashvili, Conway, & Myers, 2007) and stress (Mroczek & Almeida, 2004), whereas some have shown no significant age differences (Braken & Reintjes, 2010). Even though these quantitative results varied, studies have shown some consensus in that the causes and manifestations of these psychological difficulties vary across different age groups. For instance, one study found that depression in older people may be linked to the physical
changes they experience as they get older and their perceptions that their opportunities are narrowing leading to feelings of hopelessness (Christensen et al.). Brenes (2006) found that older people experience anxiety differently to younger people, suggesting that older participants reported less feelings of worry than younger participants. A study investigating whether reactivity to stress varies across age groups found that older compared to younger participants exhibited higher associations between negative reactivity and daily stress (Mroczek & Almeida).

To date, examinations of the relationship between age, problematic mobile phone use, and psychological well-being have found significant results indicating that children, adolescents, and young adults are more prone to overuse and reliance on their mobile phones leading to negative psychological outcomes (Bianchi & Phillips, 2005). These findings are consistent with the literature that has found anxiety levels become more evident at the age when socialisation has the strongest effect on individuals, such as during adolescence (McLean & Anderson, 2009). For example, in a study of university students, it was found that the younger the student the more they used their phones for social purposes. Furthermore, these students reported more problematic phone usage patterns and subsequent symptoms of depression, anxiety and some insomnia (Zulkefly and Baharudin, 2009). One explanation for these findings could be the theory of Digital Natives and Digital Immigrants proposed by Marc Prensky (2001). He suggested that digital immigrants were not born into the digital age but were gradually socialised into adopting and using technology and therefore do not look to technology as the first port of call for communication, information gathering, and so on. On the other hand, digital natives have grown up and have been socialised into the digital age so look at technology as an integral part of their daily lives. This theory offers to explain the age differences seen in mobile phone adoption and usage and the subsequent
psychological problems that occur from their overuse more often evident in younger age groups.

When considered against mobile phone use, studies examining gender differences reported mixed results. Geser (2006) and Walsh, White, and Young (2008) found that females generally exhibit more problematic mobile use. These differences have been explained by considering the way the phone is used and the different features of the phones. They suggest females use the phone in a more social way to foster and maintain social networks, such as using Facebook and Twitter, and for security purposes to increase their feelings of safety. Therefore, females may have a more emotional relationship with this form of technology. In comparison, males use their phones for more functional means, such as for business purposes or entertainment, e.g., online gaming features and so are less emotionally attached to them. This emotional attachment experienced by females could then lead to negative psychological outcomes if the phone is not available. For instance, a study by Beranuy, Oberst, Carbonell, and Chamorro (2009) found that females more so than males suffered psychological distress as a consequence of maladaptive mobile phone use. In contrast, some studies have found no significant gender differences in the levels of problematic mobile phone use (Bianchi & Phillips, 2005; Rees & Noyes, 2007). The researchers hypothesise this lack of gender differences may be due to gender neutrality in the reasons for adopting mobile phone technology for males and females regardless of the uses they are put to. In other words, males and females may be equally prone to overusing their phones but for different purposes.

1.2 Self-Esteem, Problematic Mobile Phone Use, and Psychological Well-Being

Self-esteem is generally defined as an individual’s relatively stable self evaluation that is closely linked with their self views and identity, and with their social relationships and
peer approval (Bianchi & Phillips, 2005; Rosenberg, 1979). Trzesniewski, Donnellan, and Robins (2003) found that self-esteem showed a distinct developmental stability over the lifespan. Specifically, it is lower in childhood, increases during adolescence and young adulthood, and then shows a steady decline during middle and old age. According to their integrative model of mood disorders, Barlow and Durand (2009) suggest that negative attributions about oneself and problems with social relationships are important factors in the possible onset of disorders such as depression. Supporting research has shown that low self-esteem has been reported by individuals exhibiting depression, anxiety, and stress (Orth, Robins, & Meier, 2009; Orth, Robins, Trzesniewski, Maes, & Schmitt, 2009; Schmitz, Kugler, & Rollnik, 2003) and addictions (Nakken, 1996). Low self-esteem has also been shown to predict technology addiction (Ehrenberg, Juckes, White, & Walsh, 2008; Hyun, Chin, Park, Ryu, & Yu, 2008; Zulkefly & Baharudin, 2009) including problematic mobile phone use and its subsequent psychological problems (Phillips, Saling, & Blaszczynski, 2006; Walsh, White, & Young, 2010). Researchers have proposed that these links between self-esteem and problematic mobile use are due to individuals’ mobile phones becoming an essential part of their self-identity and social presentation. Mobile phones allow individuals to receive validation and peer approval from social networks 24 hours a day, which appears to increase the reported levels of self-esteem (Walsh, White, Cox, & Young, 2011; Walsh, White, & Young, 2010). Psychological well-being is impacted when a person is without their phone and cannot receive any of these validating contacts from social networks that help maintain self identity and self-esteem (Hulme & Peters, 2004).

1.3 Self-Monitoring, Problematic Mobile Phone Use, and Psychological Well-Being

The concept of self-monitoring of behaviour was first proposed by Mark Snyder (1974) and has since received a great deal of empirical support. It has been found that those high in self-monitoring are social chameleons using the behavioural cues of others to adapt
their own behaviours in social situations and are highly susceptible to peer pressure (Sharp & Getz, 1996). They are highly responsive to others and eventually believe in the social appearances they create even if others see them as fake and out to impress (Gangestad & Snyder, 2000; Snyder & Gangestad, 1986). Although high self-monitors initially seem to be clever controllers and manipulators of social situations, Briggs, Cheek, and Buss (1980) found that those who exhibited high self-monitoring behaviours also scored high on the neuroticism scale on the Eysenck Personality Inventory, such that high self-monitors are likely to be insecure and defensive when they adapt their behaviours in response to others. Briggs et al. also found that high self-monitors exhibited high levels of extraversion and other directedness which has been linked to problematic and addictive behaviours (Bianchi & Phillips, 2005; Briggs, Cheek and Buss; Sharp & Getz, 1996). The psychological well-being of this population can be impacted due to their self-esteem levels being developed and maintained by evaluations and validations from others, therefore they are more anxious to adjust their social behaviours in order to “fit in” and receive the validations they require. This was shown in a study by Buri and Mueller (1988) in which high self-monitors’ self-esteem development was strongly related to the social cues from their parents’ style of discipline practises in their homes. Those who reported higher levels of self-monitoring reported lower levels of self-esteem when their parents used a less validating authoritarian discipline style in contrast to a more validating authoritative style. In contrast to these findings, Lester (1990) found no associations between self-monitoring scores and reported depressive feelings or suicidal ideation. Other studies have shown that individuals who exhibited higher levels of self-monitoring behaviour tended to use task orientated styles of coping in an attempt to reduce any feelings of stress and anxiety. Those individuals who used this avoidance strategy reported lower levels of stress and illness (Huflejt-Lukasik & Czarnota-Bojarska, 2006). Furthermore, Wysocki, Chemers, and Rhodewalt (1987) found that when high self-monitors
were in jobs which required them to frequently adapt their behaviour to suit different situations allowing them to use their interpersonal skills to a high level, i.e., in leadership positions, this personality construct became an effective buffer against stress and illness.

Of interest to the current study, an individual’s mobile phone use has been linked to their level of self-monitoring. Takao, Takahashi, and Kitamura (2009) found that those who scored high on self-monitoring also scored high on the Mobile Phone Problem Use Scale. Takao et al. explained these findings by suggesting that high and low self-monitors choose social situations that are congruent with the social behaviours that they are comfortable with. Hence, high self-monitors appear to use their mobile phones more to receive and send social cues from their acquaintances (Butt & Phillips, 2008; Snyder & Gangestad, 1982). High self-monitors may also use their mobile phone to send and receive the cues they require to adapt their behaviour, censor and control the responses they present to others, and gain the validation they require from others to maintain their self-esteem. Thus, if they do not have access to their mobile phone their psychological well-being may be negatively impacted (Bianchi & Phillips, 2005; Walsh, White, & Young, 2010).

1.4 Study Aims and Hypotheses

Previous literature suggests that psychological well-being is influenced to a large extent by various predictive factors including age, gender, self-esteem, self-monitoring, and mobile phone use. These suggestions are reasonable manifestations of study results; however, they fail to consider the possibility of a sequential paradigm that positions problematic mobile phone use in a mediational role. Therefore, the aim of the current study is to investigate and confirm what, if any, effect age, gender, level of self-esteem, and level of self-monitoring have on an individual’s psychological well being. Additionally, the study aims to investigate
the mediating potential of problematic mobile phone use. The following hypotheses have been proposed:

*Hypothesis 1.* It is hypothesised that there will be significant differences in problematic mobile phone use and psychological well-being between the gender groups. Furthermore, it is hypothesised that females will exhibit higher levels of problematic mobile phone use and therefore lower levels of psychological well-being than males.

*Hypothesis 2.* It is hypothesised that age will directly and indirectly effect psychological well-being, such that those in the youngest age group (i.e., 18-35) will report lower levels of psychological well-being than those in the oldest age group (i.e., 36-54). Furthermore, those in the youngest age group compared to the oldest age group will report higher levels of problematic mobile phone use and subsequently lower levels of psychological well-being.

*Hypothesis 3.* It is hypothesised that self-esteem will directly and indirectly effect psychological well-being, such that the lower the scores on self-esteem, the lower the scores on psychological well-being. Furthermore, the lower the scores on self-esteem, the greater the reported level of problematic mobile phone use. The greater the reported level of problematic mobile phone use, the lower the level of reported psychological well-being.

*Hypothesis 4.* It is hypothesised that self-monitoring will directly and indirectly effect psychological well-being, such that the higher the scores on self-monitoring, the lower the scores on psychological well-being. Further, the higher the scores on self-monitoring, the higher the reported level of problematic mobile phone use. The higher the reported level of problematic mobile phone use, the lower the level of reported psychological well-being.
The hypothesised path model for all participants is reflected in Figure 1 showing the proposed path relationships between each of the exogenous variables of age, self-esteem, and self-monitoring, and their respective influence on the mediator of problematic mobile phone use and the dependant variable of psychological well-being.

Figure 1. Proposed meditational path model
Chapter 2

Method

2.1 Participants

The sample consisted of 129 participants recruited from the regional city of Cairns, Australia. The sample consisted of 46 males and 83 females. Of this sample, 51.2% were between 18 and 35 years of age, and 48.8% were between 36 and 54 years of age.

2.2 Materials

2.2.1 Demographic survey. Participants were provided with an information sheet (see Appendix A) and survey questionnaire (see Appendix B). Part A of the questionnaire requested the participant's demographic information. The age groups identified for the current study were decided upon based on results of the statistics regarding mobile phone use in Australia collected in 2006 (Australian Government, 2008). The age groups included those 18-35 years of age and those 36-54 years of age, as these groups showed the highest usage figures of all the ages surveyed.

2.2.2 The Rosenberg Self-Esteem Scale (RSE) (Rosenberg, 1989). Part B of the questionnaire employed the Rosenberg Self-Esteem Scale which comprises 10 questions rated on a four point Likert scale where 1=Strongly Agree, 2=Agree, 3=Disagree and, 4=Strongly Disagree. The RSE measures an individual’s global feelings of self-worth and self-esteem with scores nearer 40 reflecting higher levels of self-esteem. This scale has been shown to have strong internal reliability of .92 and strong test-retest reliability of .85 and .88 respectively over a two week period. All items are highly correlated to the primary factor (Gray-Little, Williams, & Hancock, 1997; Kaplan & Saccuzzo, 2005). The Cronbach alpha coefficient for the current study was .90, indicating strong internal reliability. This measure
has been shown to negatively correlate with shyness, depression, and perceived stress, and positively correlate with optimism and extraversion. This supports much of the current literature regarding these factors (Robins, Hendin, & Trzesniewski, 2001). Studies have also found that this measure was comparable in both adolescents and adults (Whiteside-Mansell, & Corwyn, 2003), and has been shown to be psychometrically sound across many ages, genders, language translations, and cultures (Hatcher & Hall, 2009; Jackson, Zhao, Witt, Fitzgerald, Von Eye, & Harold; Van de Vede, Bracke, & Leverque, 2010; Schmitt & Allik, 2005; Trzesniewski, Donnellan, & Robins, 2003).

2.2.3 The Self-Monitoring Scale (SMS) (Snyder, 1974). Part C of the questionnaire employed the Self-Monitoring Scale which is a 25 question scale that measures the participants’ levels of the personality construct of self-monitoring. The participants answer true or false to each question. Scores are then totalled with one point being given for a true response to questions 5, 6, 7, 8, 10, 11, 13, 15, 16, 18, 19, 24, and 25, and one point for a false response to questions 1, 2, 3, 4, 9, 12, 14, 17, 20, 21, 22, and 23. Totalled scores between 0 and 12 indicate lower levels of self-monitoring behaviour, while totalled scores between 13 and 25 indicate higher levels of self-monitoring behaviour. Some criticism has been levelled at the SMS’s reliability and validity leading to researchers attempting to create shorter or different versions of this tool (Lennox & Wolfe, 1984; Snyder & Gangestad, 1986). However, the 25 question version was used as it has been found to best explain the self-monitoring construct (John, Cheek, & Klohnen, 1996). Studies have found that this measure correlates highly with extraversion and other-directedness, moderately with sociability and self-esteem, and negatively with shyness. Furthermore, this measure has shown adequate internal reliability with alpha coefficients of .69 and .71 (Briggs, Cheek, & Buss, 1980; Day, Scheicher, Unckless, & Hiller, 2002). The current study showed support for these findings with an alpha coefficient of .70.
2.2.4 Mobile Phone Problematic Use Scale (MPPUS) (Bianchi & Phillips, 2005).

Part D of the questionnaire employed the Mobile Phone Problematic Use Scale which is a 27 item scale designed to measure an individual’s problematic use of a mobile phone. The MPPUS was based on the addiction literature and covers withdrawal, tolerance, craving, escape from other problems, and negative life outcomes in social and private areas (Bianchi & Phillips, 2005; Takao, Takahashi, & Kitamura, 2009). Participants answer on a 10-point Likert scale from 1 (“not true at all”) to 10 (“extremely true”). The scores are totalled with higher scores reflecting more problematic phone use. The measure has been shown to have a strong internal reliability of .93 and medium to strong correlations with other measures of mobile phone use and the Addiction Potential Scale of the Minnesota Multiphasic Personality Inventory-II (0.34), thus supporting its construct validity (Bianchi & Phillips). The current study supported this high internal reliability with a Cronbach alpha coefficient of .93.

2.2.5 Depression Anxiety Stress Scales-21 (DASS-21) (Lovibond & Lovibond, 2005). Part E of the questionnaire employed the DASS-21 to measure the study’s dependant variable of psychological well-being. The DASS is a well established, empirically supported measure of an individual’s level of depression, anxiety, and stress over the past week before completing the scale. The DASS was developed because of the significant correlations between the three negative affect states and is a dimensional rather than a categorical measure, so one can be high or low on any of the subscales or the measure as a whole (Lovibond & Lovibond, 2005). The 21-item version of the DASS has been found to have good psychometric properties in both clinical and non-clinical samples with strong internal reliability for each of the scales; depression scale .88, anxiety scale .82, and the stress scale .90 and .93 for the total scale. Lovibond and Lovibond further conclude that this measure can be reliably used to examine a more general dimension of psychological distress by totalling the average z-scores for the subscales and comparing these with the severity tables in the
scale manual (Brown, Chorpita, Korotitsch, & Barlow, 1997; Crawford & Henry, 2003; Henry & Crawford, 2005; Lovibond & Lovibond). Examination of the reliability of this measure in the current study also showed strong alpha coefficients for each of the scales; depression scale .83, anxiety scale .82, and stress scale .83, and for the total scale .91.

2.3 Procedure

A pen and paper questionnaire was issued to participants by the lead researcher via group information sessions and on a one-on-one basis. Participants were known work colleagues of the lead researcher. Once questionnaires were completed, the participants placed the questionnaire, separately to the request for a summary of results form, into locked metal boxes left in an easily accessible place at the research sites. The request form was placed in the box separate to the completed survey to maintain participant anonymity. The questionnaire included an information sheet and consent was implied by the completion and return of the questionnaire.
Chapter 3

Results

3.1 Design

The demographic information, and the four measures’ scale scores and total scale scores were calculated as per instructions including reverse scoring any scale items that required it. This information was then entered into SPSS v.19 standard gradpack software package. Preliminary analysis for all variables was carried out to examine the data for normality, outliers, and missing data. The instruments used were subjected to correlation analysis to examine any relationships between them before regression analysis was carried out. A one-way between groups multivariate analysis of variance was performed to investigate gender differences in mobile phone use and psychological well-being (Hypothesis 1). An independent t-test was carried out on the variable of age to examine any mean differences across the used measures. Path analysis with multiple regression was carried out on the independent variables of age, self-esteem, and self-monitoring to examine for any direct effects on the dependant variable of psychological well-being. Furthermore, the variable of problematic mobile phone use was included in the regression analysis to examine whether this had any mediating effect on participant psychological well being (Hypothesis 2 to 4).

3.2 Preliminary Analysis

The totals, means, standard deviations, minimums, maximums, and skews for the variables of age, gender, self-esteem, self-monitoring, problematic mobile phone use, and psychological well-being were calculated. The results are presented in Table 1.
An inspection of the results showed that the variables of age, self-monitoring, problematic mobile phone use, and psychological well-being were positively skewed. Gender and self-esteem were both negatively skewed. The skewness values of the variables were converted to z-scores, after which only the variable of psychological well-being showed a significant positive skew ($p > .05$). A logarithm transformation was applied to this variable; however, no significant changes were seen in the skewness result, therefore due to the size of the sample ($n = 129$) it was decided to leave this variable untransformed (Field, 2009). To screen for univariate outliers, a cut-off score of $z > 3.29$, $p < .001$ was applied. To screen for multivariate outliers using Mahalanobis distances, cases with values greater than 20.52 ($x^2$, $df = 5$, $p = <.001$) were to be excluded. No univariate or multivariate outliers were detected, therefore no cases were excluded. Pearson’s correlations were carried out on all the variables to assess for multicollinearity. Although there were a few significant correlations, there were no violations of this assumption as they were below the selection criteria of 0.90 (Field). Homogeneity of variance was assessed using Levene’s test. After examination there were no
significant results across the sample, therefore it is tenable to assume that the variances are roughly equal (Field).

### 3.3 Multivariate Analysis of Variance for Gender Differences

**3.3.1 Hypothesis 1.** A one-way between-groups multivariate analysis of variance was carried out to investigate gender differences in participant problematic mobile phone use and their reported level of psychological well-being. There was a non-significant difference between the genders on the problematic mobile phone use of participants, $F(1, 127) = 0.23, p = .64$. There was a non-significant difference between the genders on the reported level of participant psychological well-being, $F(1, 127) = 0.05, p = .82$. When the multivariate tests of significance were examined it was observed that there was a non-significant difference between genders on the combined dependant variables, $F(2, 126) = 0.12, p = .89$, Wilks’ Lambda = .99, partial $\eta^2 = .00$.

### 3.4 Independent T-test for Age Differences

A t-test for independent means was carried out to compare the level of self-esteem, self-monitoring, and problematic mobile phone use between the two age groups. Furthermore, the DASS-21 subscales and the total scale score used to examine participant psychological well-being were subjected to the same analysis. It was found that there were no significant differences in the levels of self-esteem, self-monitoring, the subscales, or the total scale score of the DASS-21 between the 18-35 and the 36-54 age groups. There was a significant difference in the levels of problematic mobile phone use between the 18-35 age group ($M = 91.71$) and the 36-54 age group ($M = 61.24$), $t (127) = 4.76, p < .001$, indicating that the younger the age of the participant the higher the levels of problematic mobile phone use. This difference represents a medium- sized effect $r = .38$. 
3.5 Path Analysis

3.5.1 Hypothesis 2. When the variable of age was entered into the regression analysis it was found that participant age had no significant direct effect on reported levels of psychological well-being. Participant age did show a significant indirect effect in that it could predict the levels of problematic mobile use of a participant ($t = -4.07, p < .001$). This result indicates that the younger the age of the participant, the higher the scores on the MPPUS, therefore the more problematic their mobile phone use ($\beta = -.32$). Furthermore, the more problematic their mobile phone use the higher the scores on the DASS-21 ($t = 2.44, p = <.05$), indicating lower levels of psychological well-being ($\beta = .20$).

3.5.2 Hypothesis 3. When the variable of self-esteem was entered into the regression analysis, it was found that it had a significant direct effect on participant psychological well-being ($t = -3.98, p < .00$), accounting for 14.7% of the variance in this variable. This result shows that the lower the scores on the RSE, indicating lower levels of self-esteem, the higher the scores the DASS-21, which indicate lower levels of psychological well-being ($\beta = -.33$). Reported levels of self-esteem also showed a significant indirect effect in that it could predict problematic mobile phone use ($t = -2.45, p < .05$). The lower the reported levels of self-esteem, the higher the scores on the MPPUS, indicating higher levels of problematic mobile phone use ($\beta = -.19$). Furthermore, the more problematic the participant’s mobile phone use, the higher the scores on the DASS-21($t = 2.44, p = <.05$), indicating lower levels of psychological well being ($\beta = .20$), accounting for 18.5% of the variance in this variable.

3.5.3 Hypothesis 4. When the variable of self-monitoring was entered into the regression analysis it was noted that the reported level of this variable had no significant direct effect on the participant’s reported levels of psychological well-being. Participant self-monitoring did show a significant indirect effect in that it could predict the levels of
problematic mobile phone use of a participant ($t = 3.40, p = <.001$). This result indicates that the higher the scores on the SMS, indicating higher levels of self-monitoring behaviour, the higher the scores on the MPPUS, therefore the more problematic their mobile phone use ($\beta = .27$). Furthermore, the more problematic the participant’s mobile phone use the higher the scores on the DASS-21 ($t = 2.44, p = <.05$), indicating lower levels of psychological well being ($\beta = .20$). Figure 2 presents the posited model with all significant and non-significant (ns) coefficients (see Appendix C).

Figure 2. Mediational path model illustrating the direct and indirect effects on psychological well-being of age, self-esteem, and self-monitoring mediated by problematic mobile phone use.
Chapter 4
Discussion

4.1 Summary

The aim of the current study was to examine what, if any, effect the variables of participant age, gender, level of self-esteem, and level of self-monitoring had on an individual’s psychological well-being. Furthermore, the study also examined the mediating potential of participant’s level of mobile phone use. There were no significant gender differences found on any of the study variables. The results indicate that participant age and level of self-monitoring had no significant direct effect on their psychological well-being; however, their level of self-esteem had a significant direct effect. Furthermore, all the study variables showed significant indirect effects on the participant’s psychological well-being mediated by their problematic mobile phone use.

4.2 Hypothesis One: Gender Differences

Previous research regarding the influence an individual’s gender can have on their mobile phone use found mixed results. Some researchers found that females and males differed in their levels of mobile phone use (Geser, 2006) and differed with regard to problematic use and its effects on psychological well-being (Beranuy, Oberst, Carbonell, & Chamarro, 2009). Other researchers, however, found no gender differences in the levels of problematic mobile phone use (Bianchi & Phillips, 2005; Rees & Noyes, 2007). Contrary to expectation, the current study found support for the latter studies as there were no significant gender differences found in participants’ mobile phone use or with regard to reported levels of psychological well-being. Furthermore, there were no significant gender differences in the
interaction between mobile phone use and psychological well-being. These findings may be explained by considering the increasing availability and reducing price of the phones themselves, along with the increasing variety of functions that can be accessed through the handsets. Because most mobile phones now offer very similar functionality from simple phoning and texting through to full internet access and social media functions, the differing functional, behavioural, emotional, and practical reasons males and females have for owning and using phones may be changing, thus rendering the effects of owning and using mobile phones gender neutral. A logical conclusion from this hypothesis implies that if the use of mobile phones is becoming gender neutral, then any psychological distress caused by their overuse may be equally dispersed across gender. The current study did not investigate which functions of mobile phones participants were using. Future research could directly investigate the functions being used by the people identified to be most at risk of overusing their phones and whether there are any gender differences.

4.3 Hypothesis Two: Age Effects

Previous research examining age differences in self-reported levels of depression, anxiety, and stress have reported mixed results. Some studies have found that younger compared to older people reported lower levels of psychological well-being (for example, Mroczek & Almeida, 2004), whereas other studies have shown no significant quantitative age differences (Braken & Reintjes, 2010; Christensen, Jorm, MacKinnon, Korten, Jacomb, Henderson, & Rodgers, 1999; Erskine, Kvavilashvili, Conway, & Myers, 2007). The current study found no significant age differences or direct effects of participant age on their self-reported psychological well-being. By way of explanation, previous studies suggest that age differences in depression, anxiety, and stress tend to be qualitative rather than quantitative. In other words, the causes and manifestations of these psychological difficulties differ across age groups and the actual incidences reported by participants (Brenes, 2006; Christensen et
al., 1999). It is worth noting that in this current study the measure used to evaluate participant psychological well-being (DASS-21) is a cross-sectional quantitative measure and does not investigate any developmental and environmental influences on the responses seen in the study.

Age differences have been found in studies (Bianchi & Phillips, 2005) examining mobile phone use, with findings showing that younger people tend to be prone to being over reliant on, and subsequently overusing, their mobile phone. As hypothesised, the current study found support for these findings in that the younger the age of the participant the higher their reported problematic mobile phone use. Subsequently, the more problematic their reported phone use, the lower their levels of psychological well-being (Bianchi & Phillips; Zulkefly & Baharudin, 2009). This finding may best be explained by reconsidering Prenskey’s theory of *Digital Natives, Digital Immigrants* (2001). The 18-35 years of age group have grown up with mobile technology being an everyday part of life. This propensity to turn to their phones initially for social contact, information and entertainment, etc. is reasonable given their comfort with technology. Subsequently, younger generations may use their mobile phone more often than those in the 36-54 years of age group, with this latter group having to learn to use mobile technology, but being more comfortable with other forms of communication and information seeking first (e.g., books, landlines, etc.). As for the effects of problematic mobile phone use on an individual’s psychological well-being, younger people compared to older people have been found to use their phones for social purposes creating an emotional attachment to this form of technology. This can lead to the phone being overused, with the result being an increase in psychological problems such as depression and anxiety (Bianchi & Phillips; Zulkefly & Baharudin). As expected, the current study reported similar results with younger participants exhibiting higher levels of problematic mobile phone use and lower levels of psychological well-being. An explanation
for this finding is offered by exploring how mobile technology is being used. Specifically, if younger participants are turning to their phones as their primary source of social contact, internet surfing, playing games, etc. it is reasonable to suggest a strong reliance on this form of technology. Subsequently, this younger cohort may feel anxious or stressed if they are not receiving from social peers replies to text messages, if they lose phone connections, or lose at the games they are playing. Zulkefly and Baharudin (2009) found some phone users suffered insomnia due to their phone overuse which could also exacerbate any resulting anxious feelings. Closer examination of item responses from younger participants in the current study revealed that 51.2% of this group reported losing sleep due to their mobile phone use. The current study did not investigate the way the phone was being used by participants, therefore future research might investigate the different ways mobile phones are used to determine if these reasons have an effect on the other variables used in this study.

4.4 Hypothesis Three: The Effects of Self-Esteem on Mobile Phone Use and Psychological well-Being

As expected, the current study found that across all participants self-esteem had a direct effect on the reported level of psychological well-being. It was found that the lower the level of self-esteem reported by participants, the lower the levels of psychological well-being. As the current study used the DASS-21 as a measure of psychological well-being this result shows specific support for previous research that found significant correlations of lower levels of self-esteem with depression, anxiety, and stress (Lovibond & Lovibond, 2004; Orth, Robins, & Meier, 2009; Orth, Robins, Trzesniewski, Maes, & Schmitt, 2009; Schmitz, Kugler, & Rollnik, 2003). This result also supports past research that suggests an important element of these three psychological difficulties is the self-evaluation of an individual’s behaviour, social relationships, and the outcomes of any behaviour. Low self-esteem has been found to contribute to the formations of negative schemas and problems in social
relationships that are important elements in the onset and continuation of depression, anxiety, and stress (Barlow & Durand, 2009; Lovibond & Lovibond).

Previous research also implied that an individual’s self-esteem can be linked to problematic mobile phone use (Walsh, White, Cox, & Young, 2011; Walsh, White, & Young, 2010). The validation, peer approval, and social connections that an individual can gain through text messaging, phone calls, and social media can assist in increasing and maintaining self-esteem. Furthermore, it has been found that when these individual’s are disconnected from their social worlds due to being without their mobile phone their psychological well-being is impacted (Hulme & Peters, 2004). As hypothesised, findings from the current study lend support to previous arguments that participants who reported lower levels of self-esteem reported higher levels of problematic mobile phone use and subsequently lower levels of psychological well-being. It is suggested that those with lower self-esteem seek more validation and social contact in an attempt to improve their feelings of self-worth. They achieve this validation via reliance on mobile phone technology, with the end result being greater phone use. This reliance on the mobile phone leads to stress and anxiety manifested in the need to check their phone constantly. Although the current study’s meditational model can account for 18.5% of the variance in an individual’s psychological well-being, it is difficult to determine causality from these types of studies. It is unclear whether low self-esteem causes more problematic phone use leading to lower psychological well-being or whether more problematic mobile phone use leads to lower self-esteem and subsequently lower psychological well-being. Future studies could use longitudinal experimental designs to answer these causal questions.
4.5 The Effects of Self-Monitoring on Mobile Phone Use and Psychological Well-Being

The concept of self-monitoring has produced a great deal of empirical research with findings that those who score higher (compared to those who score lower) on measures of this trait are generally more anxious, extraverted, and are more vulnerable to impacts to self-esteem and psychological well-being (Buri & Mueller, 1988; Cheek & Buss, 1980). Contrary to expectation, the current study found no significant direct effect of self-monitoring on psychological well-being, which supports the findings of previous studies (e.g., Lester, 1990). This could be explained by the nature of the work the study’s sample base is involved in. As found by Wysocki, Chemers, and Rhodewalt (1987), when a self-monitor’s work environment requires frequent behavioural adaptation and social interactions, they report less stress and mental ill health. The highly social nature of the work environment of the current study’s participants could supply self-monitors with the social cues they require to adapt their behaviours to ones they feel comfortable with. Furthermore, they could be receiving the social validations and peer approval they need to maintain their self-esteem and hence do not suffer from any impacts on their psychological well-being.

Regarding the interaction between self-monitoring and mobile phone use, as expected the current study showed support for the findings reported by Takao, Takahashi, and Kitamura (2009), in that those who scored high on the self-monitoring scale also exhibited more problematic mobile phone use. The more problematic the mobile phone use, the lower the reported levels of psychological well-being. Based on past literature, high self-monitors receive social cues and validations from their mobile phone interactions. Subsequently, it is reasonable to suggest a link between mobile phone over-use and a reduction of one’s level of psychological well-being. In other words, those individuals whose psychological well-being is highly dependent on social validations and interactions with others, such as high self-
monitors, may require more social contact throughout the day and so become more dependent on their phones (Walsh, White, Cox, & Young, 2011; Walsh, White, & Young, 2010). This dependence could lead to feelings of anxiety and stress when they cannot access their phones. An alternative explanation could come from the findings of the current and previous studies that indicate that younger people exhibit lower psychological well-being due to their overuse of mobile phones (Bianchi & Phillips, 2005). In the same way that high self-monitors use their phones for social reasons in order to maintain their psychological well-being, younger mobile phone users have also been found to use their phones for more social purposes so could be seeking the same social cues, validations and approval needed to maintain their self image and their psychological well-being (Zulkefly & Baharudin, 2009).

4.6 Implications.

The current study was designed to assess the possible negative outcomes the overuse of mobile phones can have on an individual’s psychological well-being. The findings may assist individuals (particularly in younger cohorts), parents, educators, clinicians and researchers, and policy makers. Specifically, for younger individuals the findings may assist them to better understand the way they use their mobile phones and the reasons they may overuse them. Outcomes from this study may also educate them regarding the possible ramifications of any inappropriate use of their mobile phones. For parents or those interested in the well-being of young people specifically, the findings may enhance their understanding of this cohorts mobile phone use and increase their ability to provide information that encourages appropriate and positive use of this form of technology. Governments and policy makers may find these findings useful when planning programs and procedures for those engaged in technology use. From a more autocratic perspective, the findings may lend themselves to a need for greater legislative and societal controls that aim to govern the use of mobile phones. Indeed we are, in this current day, seeing evidence of this sanctioning via
restrictions to mobile phone use while driving. This is particularly important if one has a propensity to experience psychological distress linked to a high desire to be responsive to others (i.e., self-monitoring). Mobile phone companies could also be encouraged to supply disclaimers with the handsets to explain the negative impacts although this is probably contrary to their marketing plans.

From a clinical point of view, the current study’s findings could be used when assessing a client’s psychological well-being and the possible causes of any identified problems. By looking at a client’s age and using measures to assess their levels of self-esteem, self-monitoring, and their levels of mobile phone use, the clinician can evaluate whether these variables are interacting to impact negatively on their client’s psychological well-being. Because mobile phones are such an integrated aspect of the everyday lives of many people, the part these devices could play in the psychological functioning of people could help clinicians as they develop treatment plans for their clients. Furthermore, mobile phones have been shown to be beneficial as a therapeutic tool (Boschen & Casey, 2008; Preziosa, Grassi, Gaggioli, & Riva, 2009). Younger clients with low self-esteem and higher self-monitoring levels could have their mobile phone usage assessed and perhaps included into a diagnosis and treatment plan. Boschen and Casey (2008) suggested mobile phones could be useful in cognitive behavioural therapy, for instance, they suggest they could be used to provide mood ratings to the clinician, or for contacting the clinician in an emergency. This could be useful if clients are assessed to be more comfortable and proficient in using mobile phones than other methods of communication.

4.7 Limitations and Future Research

One limitation to the current study could be its use of self-report measures of self-esteem, self-monitoring, problematic mobile phone use, and psychological well-being. Self-
report measures can be susceptible to the social desirability bias, meaning participants may respond to a question with the answer they believe is more socially acceptable than another (McBurney & White, 2007). Although there are items built into these measures to limit this effect, future research could use more controlled experimental designs to test whether personality factors and mobile phone use interact to impact on psychological well-being. A further limitation of this research relates to the path analysis design. As the study was set up to investigate the specific direct and indirect paths between the study variables and psychological well-being, it is difficult to conclude whether problematic mobile phone use is a cause or a symptom of psychological difficulties. In other words, does problematic mobile phone use negatively impact on psychological well-being or do individuals with psychological problems use their mobile phones to excess? Future research could develop and examine different path models so we can better understand the influences and interactions of the study variables and mobile phones could be having on peoples’ psychological functioning.

4.8 Conclusion

Carrying on from previous research, the current study was carried out to assess the effects an individual’s age, gender, level of self-esteem, and level of self-monitoring can has on their psychological well-being mediated by their reported levels of mobile phone use. There were no gender differences found for any of the study’s major variables; however it was found that younger participants, with lower levels of self-esteem, and higher levels of self-monitoring, exhibited more problematic mobile phone use and subsequently lower levels of psychological well-being. These findings could have important implications for public health professionals, phone suppliers, and manufacturers. By using these findings, individuals who are more at risk from problematic use of their mobile phones could be identified and then supplied with information regarding the possible negative outcomes of overusing this
form of technology. Furthermore, clinicians could use these findings to help them assess the potential effects their client's mobile phone use is having on their psychological functioning and include this in the diagnostic process and subsequent treatment planning.
References


behavioural psychotherapy. *Professional Psychology: Research and Practice, 39*(5),

symptoms: A lifespan developmental investigation. *Journal of Psychoeducational


properties of the Depression Anxiety Stress Scales (DASS) in clinical samples.
*Behavior, Research, and Therapy, 35*(1), 78-89.


Christensen, H., Jorm, A. F., Korten, A. E., Jacomb, P. A., Henderson, A. S., & Rodgers, B.
(1999). Age differences in depression and anxiety symptoms: A structural equation
modelling analysis of data from a general population. *Psychological Medicine, 29*,
325-339.


Appendix A

The Effects of Mobile Phone Use on Psychological Well-Being.

INFORMATION SHEET

Project Overview:
This project will be examining the effects of an individual’s age, gender, personality factors, and mobile phone use on psychological well-being. The study aims to determine which of these factors is a predictor of psychological well-being.

Participation Procedure
Participants are required to complete a survey that will require approximately 20 minutes to complete. There are little expected risks associated with participation.

Benefits and Risks
There are expected benefits for participants in that, participants can receive a plain English statement of the results from this study and can therefore learn what effects mobile phones can have on an individual’s psychological well-being. Similarly, there are little foreseeable potential risks to any participant as all information is unidentifiable. Participants may encounter some inconvenience in completing the survey; however, if participants encounter any psychological distress as a result of completing the study’s questionnaire, you may contact Lifeline’s free telephone counselling support service on 131114.

Confidentiality / Anonymity
Participant confidentiality and anonymity will be maintained as no identifying information is required. Any collected data will be securely stored for five (5) years in accordance with the CQUUniversity policy after which it will be destroyed.

Consent
Informed consent will be obtained from participants by the completion and return of the completed survey questionnaire.

Right to Withdraw
Participants have the right to choose not to participate in this study. However, please note that once your questionnaire is completed and returned it cannot be withdrawn from the pooled data as all questionnaires are non-identified. No questionnaire can be linked to any individual participant.
Feedback

Feedback in the form of a statement of results can be obtained from the lead researcher by post. This statement can be obtained by completing the address and E-mail section on the following form and placing it in the supplied box separately to the completed survey.

Questions/ Further Information

For further information please contact; Mark Knowler E-Mail: mark.knowler@cqumail.com or Dr. Vanessa Ghea, E-mail: v.ghea@cqu.edu.au

Concerns / Complaints

During participation participants please contact CQUniversity’s Office of Research (Tel: 07 4923 2607; E-mail: research-enquiries@cqu.edu.au; Mailing address: Building 32, CQUniversity, Rockhampton QLD 4702) should there be any concerns about the nature and/or conduct of this research project.
Appendix B

Part A:

The Effects of Mobile Phone Use on Psychological Well-Being.

STUDY QUESTIONNAIRE

SECTION ONE: DEMOGRAPHICS.

Please answer the following two questions regarding your age and gender:

What is your gender?

☐ Male
☐ Female

What is your current age?

☐ 18-35 years
☐ 36-54 years
☐ 54 years and over
**Part B:**

Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle SA. If you agree, circle A. If you disagree, circle D. If you strongly disagree, circle SD.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>I feel that I am a person of worth, at least on an equal plane with others</td>
<td>SA</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>2.</td>
<td>I feel that I have a number of good qualities</td>
<td>SA</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>3.</td>
<td>All in all, I am inclined to feel that I am a failure</td>
<td>SA</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>4.</td>
<td>I am able to do things as well as most other people</td>
<td>SA</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>5.</td>
<td>I feel I do not have much to be proud of</td>
<td>SA</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>6.</td>
<td>I take a positive attitude toward myself</td>
<td>SA</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>7.</td>
<td>On the whole, I am satisfied with myself</td>
<td>SA</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>8.</td>
<td>I wish I could have more respect for myself</td>
<td>SA</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>9.</td>
<td>I certainly feel useless at times</td>
<td>SA</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>10.</td>
<td>At times I think I am no good at all</td>
<td>SA</td>
<td>A</td>
<td>D</td>
</tr>
</tbody>
</table>
Part C:

The statements that follow concern your personal reactions to a number of different situations. No two statements are exactly alike, so consider each statement carefully before answering. If a statement is TRUE or MOSTLY TRUE as applied to you, mark ‘T’ to the left of the statements. If a statement is FALSE or NOT USUALLY TRUE as applied to you, mark an ‘F’ to the left of the statement. It is important that you answer as frankly and honestly as you can.

_____ 1. I find it hard to imitate the behavior of other people.
_____ 2. My behavior is usually an expression of my true inner feelings, attitudes and beliefs.
_____ 3. At parties and social gatherings, I do not attempt to do or say things that others will like.
_____ 4. I can only argue for ideas which I already believe.
_____ 5. I can make impromptu speeches even on topics about which I have almost no information.
_____ 6. I guess I put on a show to impress or entertain people.
_____ 7. When I am uncertain how to act in a social situation, I look to the behavior of the others for cues.
_____ 8. I would probably make a good actor.
_____ 9. I rarely seek the advice of my friends to choose movies, books, or music.
_____ 10. I sometimes appear to others to be experiencing deeper emotions than I actually am.
_____ 11. I laugh more when I watch a comedy with others than when alone.
_____ 12. In a group of people I am rarely the center of attention.
_____ 13. In different situations and with different people, I often act like a very different person.
_____ 14. I am not particularly good at making other people like me.
_____ 15. Even if I am not enjoying myself, I often pretend to be having a good time.
_____ 16. I’m not always the person I appear to be.
_____ 17. I would not change my opinions (or the way I do things) in order to please someone else or to win their favor.
_____ 18. I have considered being an entertainer.
19. In order to get along and be liked, I tend to be what people expect me to be rather than anything else.

20. I have never been good at games like charades or improvisational acting.

21. I have trouble changing my behavior to suit different people and different situations.

22. At a party I let others keep the jokes and stories going.

23. I feel a bit awkward in company and do not show up quite as I feel I should.

24. I can look anyone in the eye and tell a lie with a straight face (if for a right end).

25. I may deceive people by being friendly when I really dislike them.
### Part D:

Please indicate your feelings regarding your current mobile phone use with an X; with 1 indicating “not true at all” through to 10 indicating “extremely true”.

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<tbody>
<tr>
<td>1.</td>
<td>I can never spend enough time on my mobile phone</td>
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<td>2.</td>
<td>I have used my mobile phone to make myself feel better when I was feeling down</td>
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<td>3.</td>
<td>I find myself occupied on my mobile phone when I should be doing other things, and it causes problems</td>
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<td>4.</td>
<td>All my friends own a mobile phone</td>
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<td>5.</td>
<td>I have tried to hide from others how much time I spend on my mobile phone</td>
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<td>6.</td>
<td>I lose sleep due to the time I spend on my mobile phone</td>
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<td>7.</td>
<td>I have received mobile phone bills I could not afford to pay</td>
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<td>8.</td>
<td>When out of range for some time, I become preoccupied with the thought of missing a call</td>
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<td>9.</td>
<td>Sometimes, when I am on the mobile phone and I am doing other things, I get carried away with the conversation and I don’t pay attention to what I am doing</td>
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<td>10.</td>
<td>The time I spend on the mobile phone has increased over the last 12 months</td>
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<td>11.</td>
<td>I have used my mobile phone to talk to others when I was feeling isolated</td>
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<td>12.</td>
<td>I have attempted to spend less time on my mobile phone but am unable to</td>
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<td>13.</td>
<td>I find it difficult to switch off my mobile phone.</td>
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<td>14.</td>
<td>I feel anxious if I have not checked for messages or switched on my mobile phone for some time</td>
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<td>15</td>
<td>I have frequent dreams about the mobile phone</td>
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<td>16</td>
<td>My friends and family complain about my use of the mobile phone</td>
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<td>17</td>
<td>If I don’t have a mobile phone, my friends would find it hard to get in touch with me</td>
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<td>18</td>
<td>My productivity has decreased as a direct result of the time I spend on the mobile phone</td>
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<td>19</td>
<td>I have aches and pains that are associated with my mobile phone use</td>
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<td>20</td>
<td>I find myself engaged on the mobile phone for longer periods of time than intended</td>
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<td>21</td>
<td>There are times when I would rather use the mobile phone than deal with other more pressing issues</td>
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<td>22</td>
<td>I am often late for appointments because I’m engaged on the mobile phone when I shouldn’t be</td>
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<td>23</td>
<td>I become irritable if I have to switch off my mobile phone for meetings, dinner engagements, or at the movies</td>
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<td>24</td>
<td>I have been told that I spend too much time on my mobile phone</td>
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<td>25</td>
<td>More than once I have been in trouble because my mobile phone has gone off during a meeting, lecture, or in a theatre</td>
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<td>26</td>
<td>My friends don’t like it when my mobile phone is switched off.</td>
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<td>27</td>
<td>I feel lost without my mobile phone</td>
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Part E:

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much this statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of the time
3 Applied to me very much, or most of the time

1. I found it hard to wind down
2. I was aware of dryness of my mouth
3. I couldn’t seem to experience any positive feeling at all
4. I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)
5. I found it difficult to work up the initiative to do things
6. I tended to over-react to situations
7. I experienced trembling (e.g. in the hands)
8. I felt that I was using a lot of nervous energy
9. I felt that I had nothing to look forward to
10. I found myself getting agitated
11. I found it difficult to relax
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<tbody>
<tr>
<td>13.</td>
<td>I felt down-hearted</td>
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<td>1</td>
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<td>14.</td>
<td>I was intolerant of anything that kept me from getting on with what I was doing</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<td>15.</td>
<td>I felt I was close to panic</td>
<td>0</td>
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<td>2</td>
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<td>16.</td>
<td>I was unable to become enthusiastic about anything</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<td>17.</td>
<td>I felt I wasn’t worth much as a person</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<td>18.</td>
<td>I felt that I was rather touchy</td>
<td>0</td>
<td>1</td>
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<td>19.</td>
<td>I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)</td>
<td>0</td>
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<td>2</td>
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<td>20.</td>
<td>I felt scared without any good reason</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>21.</td>
<td>I felt that life was meaningless</td>
<td>0</td>
<td>1</td>
<td>2</td>
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