A Study of Anxiety Associated with Mobile Phone Separation

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Declaration

This Dissertation is entirely my own work, and has not been previously submitted to this or any other third level institution.

Date: _23/4/2010_

Signed: _Mark Siggins_

Mark Siggins

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1. **Abstract**

This study sought to investigate Irish peoples' dependence on their mobile phones, their willingness to be separated from their mobile phones and the perceived anxiety associated with this separation. To this end a group of Irish mobile phone users aged 18 - 40 years old was recruited. Their mobile phone dependence was measured using the Cellular Technologies Addiction Scale (CTAS) and Anxiety scores calculated using the State Trait Anxiety Inventory (STAI). Participants were offered the opportunity to participate in a twelve hour separation from their mobile phones and their anxiety levels over this period were recorded and compared with a control group. Only 40% of participants were willing to go without their mobile phones. No significant difference in anxiety between groups was observed during separation. This study offers an insight into why people are unwilling to be separated from their mobile phones.

Word Count: 10,650

2. Introduction

The introduction of the mobile phone has had an enormous impact on the way people worldwide communicate and interact. No longer tied to landlines, through the use of mobile phones people are free to make phone calls almost anywhere, anytime. They have evolved from being expensive business oriented tools into affordable and enormously popular devices (ComReg, 2009).

Due largely to fears about the radio wave technology used in mobile phones as well as the mobile phones potential to cause unwanted interruption, many places such as libraries, airplanes and hospitals prohibit their use. The recent influx of mobile phones into the general population leaves unanswered questions about how people react to rules denying them the use of their mobile phones. Is it possible to identify who is willing to be separated from their mobile phones and if so what happens when that separation is enforced? The effects of removing a person's mobile phone and what that does to that person's anxiety levels have not been investigated before. This study aims to address these questions and provide some empirical data to support any conclusions made.

i. Mobile phone adoption factors

In the years between 2000 and 2009 the number of Mobile phones in Ireland rose from 1.8 million (OTDR, 2000) to 4.8 million subscriptions, giving them a market penetration rate of 108% (ComReg, 2009). Questions relating to the reason for this enormous popularity are common; why have mobile phones, also known as 'Cell-Phones' in America or 'Keitai' in Japan, become so widespread?

Social practices enabled by the mobile phones' features appear to be a key driver for initial adoption. Security, relationship formation, peer group pressure and the need for connection are all possible explanations for the popularity of mobile phones. Aside from aesthetic appeal they can be used to make phone calls, send SMS (Short

Message Service) messages (AKA text messaging), send emails and browse the internet.

Parallels are sometimes made to the popularity of the internet, however an important distinction needs to be made when dealing with this argument – the setting in which people have their first introduction to these two technologies differs in the cost to the user. The internet is often encountered at a terminal that does not belong to the individual, often in an educational setting or in the home. The communications in the form of email or instant messaging do not typically incur additional cost. To use a mobile phone, a person must purchase or rent one and is usually required to pay for the calls and text messages. It seems likely then, that the reasons behind the mobile phones appeal must be stronger than those of the internet as people are willing to pay for them.

Early research on mobile phone use focussed on the base reasons behind peoples desire to own a mobile phone. The question posed in a Turkish study by Oxcan and Kocak (2003) was whether people wanted to own a mobile phone for its value as a status symbol or to satisfy a deeper need for connectedness. Their results seem to indicate that in general, a persons' initial purchase of a mobile phone was made for status but subsequent purchases were less likely to be made with status in mind. They identified the differences in perceived status value between different makes of phone and noted that levels of usage can indicate the reasons behind a mobile phone purchase. Their data suggests that lower levels of mobile phone usage indicated a purchase made for status (Oxcan & Kocak, 2003).

Secondary aspects of mobile phones are sometimes cited as drivers for adoption. Katz and Sugiyama (2003), reported on their investigation of the significance assigned to the perceived fashion value of a mobile phone in Japanese culture. Their research builds on a theory proposed by Katz and Aakus (2002) known as 'Apparatgeist'. This can be thought of as the underlying spirit of any machine or technology which impacts on both the design and the significance afforded to it by the public once it becomes aware of its existence. The significance can be both negative and positive. Katz and Sugiyama (2003) found that fashion perceptions were a relevant influence on adoption. Conversely, the opposite is also applicable as a reason not to get a phone.

Cultural differences were found not to be substantial between American and Japanese results.

Staying in Japan, the Keitai (Mobile phone) is widely used and several studies have been conducted around the impact of Keitai on their lifestyle and society. One of these studies examines friendship formation and maintenance among high school students. Japanese students use their Keitai to send emails more than any other group examined. The length of these emails and the difference between traditional text message use, as identified in other studies, is not examined. The results show that having a mobile phone had little impact on relationship formation but enhanced existing friendships by allowing greater access to friends. The authors also state that they believe social exclusion takes place if an individual does not have a mobile phone but they could not substantially support this (Kamibeppu & Sugiura, 2005).

ii. Changes in behaviour due to mobile phone use

Regardless of what the initial mobile phone adoption driver was for an individual, once that person begins to use their mobile phone, behavioural changes can often be observed. These range from a compulsive checking of the phone for messages, using it as a crutch in awkward social situations or declining to memorise information when it can be stored in the mobile phone just as easily. Some cultural factors seem to play a role in the behaviours exhibited, for example; Korean people have a culture in which spontaneous gathering of many people are commonplace. The nature of mobile phone technology means that calls can be made anywhere anytime and it is this that makes the mobile phone an important tool when organising impromptu gatherings.

Some behaviour appears to be consistently influenced and encouraged by mobile phones use across many cultures. Among those which seem to transcend cultures, is the behaviour which Norwegian researchers have termed hyper-coordination. Also known as a softening of time, it has led to the removal of taboo's surrounding being late for appointments. The mobile phone allows people to organise and re-organise meetings with an abandon that many pre-mobile phone people would have found abhorrent (Ling & Haddon, 2003). Garcia-Montes (2006), has taken the idea of hyper-coordination and predicts that mobile phone usage will lead to people distancing

themselves from immediate situations and even to a loss of ability to cope with situations as they arise.

Mobile phones have also fostered the development of totally new behaviours and activities. Mobile phone ringtones or mobile phone specific profiles have no corresponding pre-mobile metaphor. Behaviours such as frequently changing these ringtones and compulsively touching or playing with the mobile phone in difficult social situations, are specific to the mobile phone technology. A Korean study concluded these behaviours were expressions of the individual's identification with their mobile phone and an effort to stand out from the group (Ha, Chin, Park, Ryu & Yu, 2008). Of course, they could also be a nervous reaction or attempt to displace anxiety or relive boredom.

Mobile phones are not the only communication technology to emerge and gain mainstream acceptance in recent years. Factors which now influence our choices of communication medium have been explored by Madell and Muncer (2007). Their study deals primarily with the choices typically made in regard to internet or mobile phone communication. Their research involved a college student cohort and as such may not translate well to the general population, however they found that the level of control required for communication was a main driver for medium selection. Emails were chosen when asynchronous communication was deemed acceptable. When a faster response was desired then text messages were chosen. The main drivers for text message use were cost and efficiency. The lack of social cues afforded by text messaging introduces a risk of misunderstanding and so mobile phone calls were preferable if a greater control was required to convey the messages.

The use of mobile phones as a mass medium through which to disseminate news is another way our behaviour has been altered. In the wake of the Boxing Day tsunami in 2004, the majority of Finnish people learned of the tragedy from friends via their mobile phones or amateur websites. Kivikuru (2009) theorises that the pre-existing trust between sender and receiver and the need to disseminate news of such a magnitude in a sincere way lent itself towards mobile phone communication.

Howard Rheingold (2003) devotes a whole book to the notion of 'Smartmobs' or smart mobile phones. He deals with ideas such as the emergence of swarm intelligence and the social mind, both ideas based on a highly mobile and constantly

interconnected population. Ireland, with its 108% market penetration rate for mobile phones definitely falls into this category (ComReg, 2009). His book suggests that adding true mobile internet access to mobile phones will lead to an even greater uptake on mobile phones and allow for greater mass collaboration and communication than ever before. As these capabilities evolve it seems likely that our behaviours will evolve to keep pace.

iii.   *Psychological traits associated with mobile phone use*

The psychological traits which can pre-dispose people to the various behavioural changes associated with mobile phone use have been investigated with varying success. Perhaps unsurprisingly, introverted people seem to prefer to use text messages to communicate while extroverts prefer to use voice calls. Other studies claim that loneliness is a driver for voice call selection over text messages and that being female seems to pre-dispose individuals towards higher mobile phone use (Reid & Reid, 2007; Sánchez-Martínez & Otero, 2008).

Pioneering research in the area of mobile phone addiction and predictors for problem mobile phone use by Bianci and Philips (2005), found higher levels of extraversion and lower self esteem could be used to predict problem levels of use. Neuroticism was investigated but not found to have any significant impact on problem use. In the same study, gender findings indicated females used their mobile phones for social reasons while males were more likely to make more business related calls. Age was only a factor when it came to the comparative number of text messages sent. Younger people sent more text message than older people.

The question of mobile phone communication method selection was addressed by Reid and Reid (2007). Their investigation compared voice calls and SMS messages within the constructs of social anxiety and loneliness. SMS messages were rated as less intimate, but preferred by socially anxious people. Voice calls were preferred by those who scored highly on loneliness scales. The study theorises that voice calls allow for expression of the true self while SMS messages allow the user to construct their intended message more carefully.

A Danish study found that inter-family communication patterns are changing due to mobile phone use. Mobile phones are increasingly being used to maintain, what they term as "presence-at-a-distance"(Christensen, 2009). Similarly, in Spain excessive use among adolescents has shown correlations with living in a rural area. The explanation presented by Sánchez-Martínez and Otero (2008) is that the need for security felt by parents leads to increased use of mobile phones to check their children were well, or simply to communicate everyday family news.

Bonds of friendship or family ties are not new constructs. The use of mobile phones has not created these ideas, however their use may serve to enhance or degrade the quality of such relationships. Sable (1997) concludes that, feelings of interpersonal attachment among adults, are intensified by the quality of their connectedness and that real anxiety and anger could be measured when a separation is imposed.

Korean data, gathered using a self made excessive use questionnaire and a cohort of students, suggests that excessive mobile phone use can be correlated with higher anxiety and lower self esteem. These indicators were not found to reach levels associated with psychological problems (Ha et al, 2008).

Another study, carried out on a Spanish student cohort found correlations between mobile phone use, being female, having higher than normal anxiety measures and also with insomnia (Jenaro, Flores, Gomez-Vela, Gonzalez-Gil & Caballo, 2007). Sanchez-Martinez and Otero (2008) reported similar results using an adolescent cohort. Increased social anxiety, depressive symptoms and being female all showed correlations with increased cell phone use. They suggest an explanation for the high usage correlation with social anxiety and depression is that people are seeking to alleviate these negative symptoms by reaching out to others using the mobile phone.

Another recent study on a young all female cohort found a correlation between urgency and impulsivity on the perceived dependence on their mobile phones. The indicators used in this study were simply a self reported measure of dependence. Also in this study they expected to find a link between trait anxiety and perceived dependence. This was not found. (Billieux ,Van Der Linden, D'Acremont, Ceschi & Zermatten , 2007).

In contrast, research by Merlo and Stone (2007) supports the claim that anxiety symptoms are associated with increased problematic mobile phone use. According to their data, generally, anxious people seem more likely to be highly attached to their mobile phones.

Anxiety is a state often cited as an indicator of, or at least co-existing with, problematic mobile phone use. The definition which will be used for anxiety is from Alloy, Jacobson and Acocella (1999). Their definition states: 'Anxiety is a state of fear which affects many areas of functioning. Anxiety involves three basic components:

1. *Subjective reports* of tension, apprehension, dread and expectations of inability to cope.

2. *Behavioural responses* such as avoidance of the feared situation, impaired speech and motor functioning, and impaired performance on complex cognitive tasks.

3. *Physiological responses* including muscle tension, increased heart rate and blood pressure, rapid breathing, dry mouth, nausea, diarrhoea and dizziness.'

Anxiety is commonly measured across two scales. General or trait anxiety will vary from person to person and is the default anxiety level experienced by a person all the time. State anxiety is anxiety felt by a person at a particular moment, often in response to a particular threat. Anxiety is very often short lived and seldom fails to diminish once the source of tension or fear is removed (Marks, 1978; Merlo & Stone, 2007).

iv.   *Mobile phone dependence, addiction and separation*

The behavioural changes experienced by an individual can sometimes be manifested to the extent where it can almost be called an addiction. When a person spends more money than they can reasonably afford on mobile phone calls or text messages, or when their use of the mobile phone impacts on real world relationships then it can be classed as abnormal use. Why mobile phone use leads to such addictive behaviour is not clear. LaPorta (2006) presents the theory that, from a Freudian perspective; the addictive behaviour, manifested as the response to a stressor, can be thought of as an

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attempt to reach a self induced disassociative state. This may be over-simplifying the issue.

The DSM-IV TR has an extensive section dealing with substance addiction but as yet no section dealing with technological addiction. The closest match the DSM-IV-TR offers is that of substance use disorders. These are commonly divided into two ratings which exist side by side and combine to give an overall severity of the condition. The more benign part of these disorders is termed 'dependence'. When a sufferer is dependent on a substance the condition does not typically interfere with everyday life unless the substance is removed. The 'abuse' part of addiction is identified through uncontrolled negative impacts on the sufferer's day to day life (American Psychological Association, 2000).

Due to the lack of the accepted DSM-IV-TR definition for technological addiction, some studies have used modified internet addiction scales to measure mobile phone addiction and dependence. One such study explored the link between substance abuse and addiction to either the internet or to mobile phone use. No link could be substantially supported (Jenaro et al, 2007).

As has been pointed out earlier, the mobile phone can be used for voice, SMS or email. Any investigation of dependence or addiction should address all three. Self-reported problem SMS use in many college populations has resulted in the creation of a scale to measure overuse of SMS. The SMS problem use scale borrows heavily from internet problem use scales and may miss technology, or usage, specific indicators (Rutland, Sheets & Young, 2007).

Walsh, White and Young (2007) make the distinction between problem use and addiction. They claim it is possible to excessively use the mobile phone without being addicted to it. They identify withdrawal symptoms when mobile phones were not available and cite the feeling of being 'lost without it' as the most cited symptom of withdrawal. In their study to determine why Australians use their mobile phones they found that mobile phone use served to gratify 3 functions; self, social and security. Of these three, it is those who derive self-gratification from their mobile phones who were most likely to demonstrate addictive symptoms.

A common thread running through much of the literature is the sense of not being able to do without a mobile phone. Kamibeppu and Sugiura (2005) asked the question as part of their study and reported that females were more likely to record feelings about not being able to do without their mobile phones than males.

There are places where mobile phones are not allowed, such as some hospitals and airplanes. Anecdotally the reasons given often cite concerns about electronic interference from mobile phones interfering with sensitive equipment. Public concern with these factors however has been examined and found to rank less than the perceived risks posed by pollution, microwaves, pesticides and air pollution (Petrie, Sivertsen, Hysing, Broadbent & Moss-morris, 2001). This study only examined attitudes and not the actual effects of mobile phone interference. Regardless of peoples' opinions, the rules banning mobile phones exist.

Only one published study of mobile phone separation could be located by this researcher. In 2004 James Katz (2006), a lecturer at Rutgers university in the USA solicited 102 members of the student body to take part in a 48 hour mobile phone separation experiment. Only 82 actually participated in the experiment. The number of participants who had not switched on their mobile phones was captured at regular intervals. Over 50% were able to go 24 hours without their mobile phones but only 6% managed to go the full 48 hours without switching on their phones. The reasons cited for non completion were that it was too hard and situations arose in which they felt they needed to use their phones. 70% of those who completed the separation felt their lives were worse for the 48 hours without their phones although some enjoyed the experience. Gender, age or other demographic information was not reported nor was any psychographic information on participants cited.

In an article examining cell phone addiction, LaPorta (2006) indicates that as many as 30% of Americans who own mobile phones claim they would not be able to live without it. This question was also posed by Sánchez-Martínez and Otero (2008). They found that 20% of mobile phone users were unwilling to separate from their mobile phones. Related to this they found 47% of subjects with a mobile phone did not turn it off in situations where they were instructed to do so.

So, is this fear of separation a valid and real cause of anxiety? Vincent (2006) approaches the question by assuming that it is. She assigns the blame for the anxiety

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felt, while a mobile phone is absent, directly to user. She argues that, the emotional attachment we have with our mobiles is a consequence of the investment we have made in the mobile phone. The study theorises that using it for so many different purposes, storing photos, messages, and numbers, as well as the positive rewards of its use to maintain social connections have led us to the point where anxiety on its removal is almost inevitable. Bearing this in mind, the vast profusion of mobile phones in Ireland (ComReg, 2009) coupled with merely anecdotal reports of mobile phone separation anxiety would seem to indicate that either it is not a widespread issue or that the Irish do not separate from their mobile phones.

It is worth noting that one of the diagnostic criteria for separation anxiety listed by the DSM-IV-TR is the use of a telephone to limit the anxiety felt during separation. Care must be taken when using these criteria however as separation anxiety does not typically present after adolescence. The symptoms often associated with separation anxiety in adolescence would partially indicate a panic disorder with agoraphobia when observed in adulthood (American Psychological Association, 2000).

At a more general level a cause of anxiety experienced in adulthood is shown in a study by Diamond, Hicks and Otter-Henderson (2008). When examining anxiety levels reported by romantic partners over the course of a planned separation they found that they increased at the beginning of the period and then gradually reduced to pre-separation levels as they got close to reunion. It appears that the loss of a loved one, even if only for a short time, can cause anxiety.

If we accept that it is possible for people to use their mobile phones to the extent it can be considered overuse then is the fear, identified in many studies, of being separated from their mobile phone a real problem? Places such as hospitals, most aeroplanes, lecture halls, cinemas and churches all ask that mobile phones be turned off upon entry. Do these restrictions cause people real increases in anxiety?

Knowing that situations regularly exist where people are requested to go without the use of their mobile phones, the state of the current literature leaves the following research questions unanswered:

1. Does removing a person's ability to make and receive phone calls or text messages on their mobile phone increase their anxiety levels?

2. If an increase in anxiety is found to occur when a person is separated from their mobile phone, is this just a temporary effect or does it increase or diminish over the period of separation?

3. When faced with the real possibility of separation, will people willingly agree to be separated from their mobile phones?

Based on these research questions and previous research by Merlo and Stone (2007) the Primary hypothesis was defined as: *Separating a person from their mobile phone will result in increased situational anxiety levels for the duration of the separation when compared with anxiety levels experienced when the mobile phone is available for use.*

A possible reason for peoples' attachment to mobile phones is attributed to their use as emotional conduits and their use in relationship maintenance. Knowing that anxiety, caused when people are separated from romantic partners, peaks early in the separation duration and returns to normal upon reunion (Vincent, 2006; Stauder & Kovacs, 2003); a secondary hypothesis was formulated as follows: *Any increased anxiety levels experienced while a person is separated from their mobile phone, will reach peak levels at the beginning of the separation period.*

A third hypothesis was included, based on earlier research, which showed a link between mobile phone dependence, anxiety (Merlo & Stone, 2007) and common risk avoidance strategies employed to reduce the risk of anxiety: *People who agree to take part in a mobile phone separation experiment will have lower general anxiety levels than those who refuse to attempt separation from their mobile phones.*

Linking the third hypothesis to the correlation reported by Merlo and Stone (2007) between mobile phone dependence and anxiety a fourth hypothesis was defined as: *People who agree to take part in a mobile phone separation experiment will have lower mobile phone dependence scores than those who refuse to attempt separation from their mobile phones.*

This study will aim to provide information to test the validity of these hypotheses.

3. Method

i. *Participants*

Participants were limited to Irish residents aged between 18 and 40 years of age who own a mobile phone or use a mobile phone regularly. Participants were recruited from university campuses and the general public via personal appeal, and by placing advertisements on the author's facebook and twitter pages. The online data collection ran for a period of 7 weeks from 10 January 2010 to 21 February 2010.

A total of 176 responses to the online questionnaire were recorded, of which 111 were completed. There were 105 useable questionnaires, and consequently 105 participants in this study (58 females and 47 males).

Participant ages ranged from 19 to 40 years with a mean age of 29.1 years (SD = 5.7 years).

42 people agreed to attempt the mobile phone separation (22 male, 20 female) and 63 declined to participate. This gives a willingness to attempt to mobile phone separation figure of 40%.

Of the 42 people who agreed to try separation, 5 were found to have anxiety scores higher than the safe cut off point and so were not included. The response rate to the instruction booklets which were sent out was found to be 67%. 37 booklets were sent out with 25 being returned. The mean age of participants who submitted replies was 29 years old. One of the experiment group reported switching on her mobile phone during the experiment citing pressure to send out text messages for a group event she was organising. This returned booklet was not counted as a response.

i. *Materials*

The Cellular Technologies Addiction Scale (CTAS) adapted for Irish use, the Spielberger State Trait Anxiety Inventory (STAI) (S-Anxiety and T-Anxiety), a

Mobile Phone Use Survey, a control group instruction booklet and an experiment group instruction booklet were employed in this study.

Cellular Technologies Addiction Scale (CTAS). The CTAS questionnaire quantifies an individual's addiction to their mobile device. It has been used in a study of anxiety and cell phone dependence (Merlo & Stone, 2007) and is used here with permission from Dr Lisa J. Merlo. The CTAS has 2 subscales which can be used to measure dependency and mobile phone abuse. The CTAS uses some American phrases which were adapted for an Irish cohort. These changes consisted of changing the word "cell" in cell phone to "mobile". This was done to ensure the questionnaire felt relevant to Irish participants who do not typically use the words cell phone. The CTAS form used can be found in Appendix *A*.

Spielberger State-Trait Anxiety Inventory (STAI). This questionnaire has been used extensively in research and clinical practice (Brook, 1976; Miller, 1979; Stauder & Kovacs 2003). It comprises separate self-report scales for measuring state and trait anxiety. The S-Anxiety scale (STAI Form Y-1) consists of twenty statements that evaluate how respondents feel "right now, at this moment."

The T-Anxiety scale (STAI Form Y-2) consists of twenty statements that assess how people generally feel. The STAI forms Y-1 and Y-2 can be found in Appendix B.

Mobile phone usage questionnaire. This questionnaire was developed by the author for this study and consisted of three parts. (a) Demographic information about the participants. (b) Information on their perceived mobile phone use. (c) Willingness to go without their mobile phones for twelve hours. This was securely administered online using https and the online survey tool – SurveyGizmo.com and can be found in Appendix *C*.

Control group instruction booklet. The control group in this study were given a printed booklet containing instructions on what they were required to do. It consisted of an introduction and instruction page, a checklist, 5 ordered and titled STAI Y-1 forms and an actual mobile phone usage form. It can be found in Appendix D.

Experiment group instruction booklet. The experiment group in this study were given a printed booklet containing instructions on what they were required to do. It consisted of an introduction and instruction page, a checklist, a declaration of

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completion, 5 ordered and titled STAI Y-1 forms and an actual mobile phone usage form. It can be found in Appendix E.

The control group and experiment group instruction booklets were identical except that the experiment group were requested to power off their phones for the twelve hours while the control group were not. Anxiety scores were recorded ten minutes before the twelve hours began, ten minutes after the twelve hour start, six hours into the twelve hours, ten minutes before the end of the twelve hours and then finally, ten minutes after the end of the twelve hours. Mobile phone usage was recorded throughout using diary entries.

Both the control group and the experiment group booklets were posted to the participants and included a postage paid envelope to return the completed booklet as well as a small mobile phone sized elastic tag to attach to their mobile phones as a reminder. It had "REMINDER" and "PUT ME ON PHONE" printed on each side of the tag. This reminder tag was to ensure both that there was a visual indicator to the control group participants to remind them to record their actual usage throughout the twelve hours and to remind the experiment group to record their compulsive or desired use throughout the separation period.

ii.   *Procedure*

Participants were recruited by personal appeal and online advertisement. Participants were directed to a secure webpage where informed consent was obtained. Participants were free to leave at any time and a prominent "Quit" button was placed on each page.

Interested participants were invited to fill out the online survey, which consisted of the CTAS, STAI (form Y-2) and the mobile phone use questionnaire, by giving the most appropriate response to each item. Logic built into the questionnaire ensured that participants who agreed to try the twelve hour separation were asked for a contact address while those that refused were asked to provide the main reasons for not wanting to try the twelve hour separation.

Online replies were collected and questionnaire scores calculated as instructed in the manuals. Scores were entered into SPSS (Version 15) and participants were assigned a numeric identifier. Eligible participants who had agreed to try the separation were randomly assigned by two independent researchers into two gender balanced groups. These two groups were randomly designated as the control and experiment group respectively. Control group participants were sent the control group instruction booklet while the experiment group were sent the experiment group instruction booklet.

Both groups were given two weeks to complete the booklet, and to return it using the postage paid envelope provided, from when they received it. After one week, participants who had provided an email address and not returned the forms were sent a reminder email and another after two weeks had elapsed.

Returned forms were checked for validity and the STAI portions were scored as instructed in the manual. All data points were then added to the existing SPSS file and the data analysed. Pearson's 'R', a parametric test of correlation, was used to investigate links between dependence and anxiety scores. Independent T-tests were performed on the anxiety scores for time slot recorded for each group during the experiment.

One pilot study was completed using four participants. Only one issue was reported by participants in follow up interviews. Participants in the control group reported difficulty in remembering when to record mobile phone use. With this in mind, a tag to be attached to the mobile phone was added to the instruction booklet provided to participants in the experiment section. This was designed to remind control group participants that they were taking parting in an experiment and that they should record their mobile phone usage.

The procedure followed by participants can be seen in Figure 1.

Mobile phone separation - Experimental Design

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                    ┌──────────────────────┐
                    │ Participant recruitment │
                    └──────────────────────┘
                              │
                    ┌──────────────────────┐
                    │  Informed consent     │
                    └──────────────────────┘
                              │
                    ┌──────────────────────┐
                    │  Initial questionairre │────── Refusal to try separation
                    └──────────────────────┘
         Agree to separation  │
                    ┌──────────────────────────────┐
                    │ Participant suitability evaluation │  Unsuitable Participant
                    └──────────────────────────────┘
                    Suitable participants │
         ┌─────────────────┐    ┌──────────────────┐
         │  Control group   │    │ Experimental group │
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t - 10 minutes   ┌──────────────────────┐
                 │ Anxiety state questionairre │
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t + 10 minutes   ┌──────────────────────┐
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                                            Mobile phone
t + 360 minutes  ┌──────────────────────┐  removed for 12
                 │ Anxiety state questionairre │  hours
                 └──────────────────────┘
t + 710 minutes  ┌──────────────────────┐
                 │ Anxiety state questionairre │
                 └──────────────────────┘
t + 730 minutes  ┌──────────────────────┐
                 │ Anxiety state questionairre │
                 └──────────────────────┘
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                    ┌──────────────────────┐
                    │  Participant debriefing │
                    └──────────────────────┘

t = time chosen by
    participant to
    begin
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Figure 1 – Mobile phone separation - Experimental design

iii.   Ethics

This study was based on research suggesting that anxiety and mobile phone dependence are linked (Merlo & Stone, 2007). The effects of removing a person's mobile phone and what that does to that person's anxiety levels have not been investigated before. Because of the increased likelihood of anxiety the proposal for

this study was presented to the ethics board of IADT in autumn 2009 and was passed by the same board. The potential to cause increased anxiety levels was considered at all stages during experimental design, data collection and debriefing of participants.

The study used several techniques to ensure that ethical best-practices were followed.

Participant's informed consent was obtained at the beginning of the data gathering and participants were reminded at all stages that their participation was entirely voluntary and that they were free to withdraw from the study at any time.

Online questionnaires included a prominent 'Quit' button on each page, in line with the current British Psychological Society guidelines for online research. Pressing the quit button brought participants to a page containing debriefing information and links to appropriate resources as seen at the end of the experiment group booklet (Appendix E)

All data obtained online was gathered using secured web protocols (e.g. https) and all identifying data was encrypted using the program TrueCrypt (Version 6.1a) when not in use.

a. Special concerns

Anxiety concerns due to separation were addressed by not physically removing participants from their mobile phones, instead participants were asked to power off their mobiles but to keep them with them. At all times participants were informed that if they needed to use their phone for a reason they deemed important enough, that they were free to do so. Anxiety is often short lived and by removing the source of anxiety it follows the anxiety would be diminished (Marks, 1978). In this case, by powering on the phone when the participant was uncomfortable, the perceived source of anxiety was removed.

b. Screening criteria

Participants were screened for abnormally high anxiety scores after the initial online survey was completed. Any participant who had agreed to take part in the separation experiment had their initial trait anxiety scores calculated and any participant with a score placing them in a range considered at risk, as defined by Stauder & Kovacs (2003), were removed from the study. An STAI trait score above fifty three

(indicative of possible depressive disorders when combined with other factors) was used as the cutoff point for participation. Volunteers with a score greater than this were contacted, thanked for their interest and provided with the same links as found at the end of the experiment group booklet (Appendix E).

4. Results

i. Mobile phone separation experiment

The primary hypothesis, which stated that the group which was separated from their mobile phones would have higher situational anxiety scores than the group who were not separated, was not supported.

The raw anxiety scores for each recorded time were split by group and compared using the Mann-Whitney test. A line diagram showing the mean and standard deviation for each group for the duration of the experiment can be seen in Figure 2. There was no significantly significant difference between anxiety scores for each group at any of the recorded times.

Anxiety at $t - 10$ minutes $(U = 70.5, N_1 = 11, N_2 = 14, p = .363,$ one-tailed$)$.

Anxiety at $t + 10$ minutes $(U = 74, N_1 = 11, N_2 = 14, p = .446,$ one-tailed$)$.

Anxiety at $t + 360$ minutes $(U = 70.5, N_1 = 11, N_2 = 14, p = .363,$ one-tailed$)$.

Anxiety at $t + 710$ minutes $(U = 69.5, N_1 = 11, N_2 = 14, p = .343,$ one-tailed$)$.

Anxiety at $t + 730$ minutes $(U = 72.5, N_1 = 11, N_2 = 14, p = .404,$ one-tailed$)$.
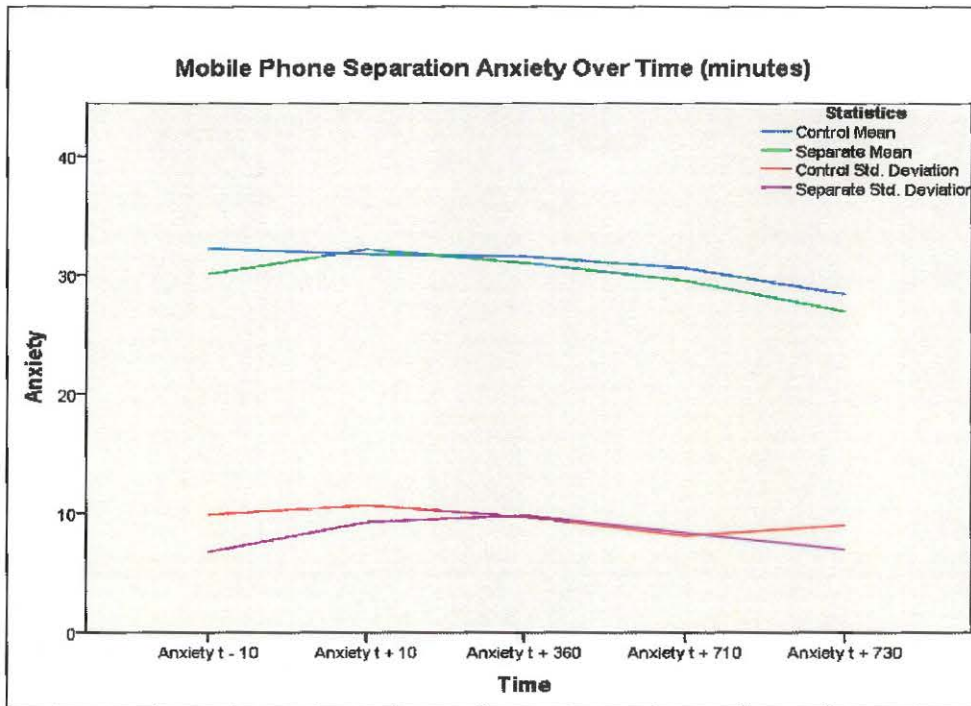
Figure 2 – Average anxiety scores for control and desperation groups

As the response rate for the separation and control groups was only 67% an analysis of the known psychographic parameters for these participants was completed.

The low number of responses for the experiment groups meant that non parametric analysis techniques were appropriate for these results. The use of a Mann-Whitney test to examine trait anxiety scores for the experiment group indicated that the participants who returned the separation booklets (Median = 41.0, Range = 28.0) had higher scores than those who did not return booklets (Median = 28.0, Range = 15.0). The difference was significant ($U = 16$, $N_1 = 14$, $N_2 = 5$, $p = .0435$, one-tailed).

A similar analysis on the control group showed that trait anxiety levels for the group who returned their booklets (Median = 40.0, Range = 26.0) were also higher than those who did not return their booklets (Median = 39.5, Range = 25.0). This was not shown to be significant ($U = 28.5$, $N_1 = 11$, $N_2 = 6$, $p = .33$, one-tailed).

The second hypothesis stated that any increase in anxiety experienced by the separation group would peak at the beginning of the separation period. This was also not supported.

Differences in anxiety score changes between recording times were also analysed using the Mann-Whitney test. The mean scores for changes in anxiety for each group over time can be seen in Figure 3. A greater increase was recorded for the first change in anxiety for the separation group, but no statistically significant differences in the rate of change in anxiety over time, between groups, was shown.

Anxiety difference (t-10 to t+10)   ($U = 63$, $N_1 = 11$, $N_2 = 14$, $p = .233$, one-tailed)

Anxiety difference (t+10 to t+360)   ($U = 70$, $N_1 = 11$, $N_2 = 14$, $p = .363$, one-tailed).

Anxiety difference (t+360 to t+710)   ($U = 70$, $N_1 = 11$, $N_2 = 14$, $p = .363$, one-tailed).

Anxiety difference (t+710 to t+730)   ($U = 70.5$, $N_1 = 11$, $N_2 = 14$, $p = .363$, one-tailed).

Observed Changes in Anxiety Over Time

Experiment Groups		Anxiety Difference (t-10 to t +10)	Anxiety Difference (t+10 to t +360)	Anxiety Difference (t+360 to t +710)	Anxiety Difference (t+710 to t +730)
Control	Mean	.6364	-.1818	-1.0000	-2.0000
	N	11	11	11	11
	Std. Deviation	5.71442	9.62100	9.03327	6.16441
Separate	Mean	2.5000	-1.1429	-1.3571	-2.8571
	N	14	14	14	14
	Std. Deviation	5.28787	4.24005	5.61053	5.06659

Figure 3 – Changes in anxiety scores over time for control and separation groups

Mobile phone use throughout the experiment was captured using diary entries. Actual mobile phone use was captured for the control group and desired use by the separation group. Other uses for mobile phones cited by participants were: use as timepieces, calendars, alarm clocks, password stores and for setting reminders. Data shown in Figure 4 is for actual use by the control group and for compulsive use by the experiment group.

Reported Mobile Phone Use

Experiment Groups		Number of SMSs	Number of Calls	Number of Other
Control	Mean	7.5455	1.2727	1.7273
	N	11	11	11
	Std. Deviation	8.84719	2.19504	3.49545
Separate	Mean	1.0714	.4286	.6429
	N	14	14	14
	Std. Deviation	1.94004	.93761	1.08182

Figure 4 – Average actual versus compulsive mobile use breakdown

ii.   *Addiction, Dependence and Anxiety*

The third and fourth hypothesis stated that the cohort who declined to participate in the separation experiment would have higher general anxiety and mobile phone dependence scores than the cohort who agreed to attempt separation. Neither of these hypotheses were supported.

The average mobile phone dependence score across all participants was 64.57 (SD = 17.1). The average mobile phone abuse score across all participants was 33.25 (SD = 10.4)

Higher average rates of mobile phone dependence were recorded for the group who declined to participate in the separation experiment (65.73) when compared to the group who agreed to try the separation experiment (62.83). The mean difference between conditions was 2.89 and the 95% confidence interval for the estimated population mean difference is between -9.66 and 3.86. An independent t-test showed that the difference between conditions was not significant (t = -.849, df = 103, p = .199, one tailed).

Lower average rates of anxiety were recorded for the group who agreed to participate in the separation experiment (40.45) when compared to the group who were not willing to try the separation experiment (42.31). The mean difference between conditions was -1.865 and the 95% confidence interval for the estimated population mean difference is between -6.18 and 2.45. An independent t-test showed that the difference between conditions was not significant (t = -.857, df = 103, p = .197, one tailed).

There was a significant correlation between mobile phone addiction and trait anxiety scores (r = .377, N = 105, P < 0.0005, one-tailed). It is a moderately strong correlation: 14.2% of the variation is explained. The scatter gram (Figure 5) shows the data points are moderately well distributed along the regression line, in a linear relationship with some outliers.
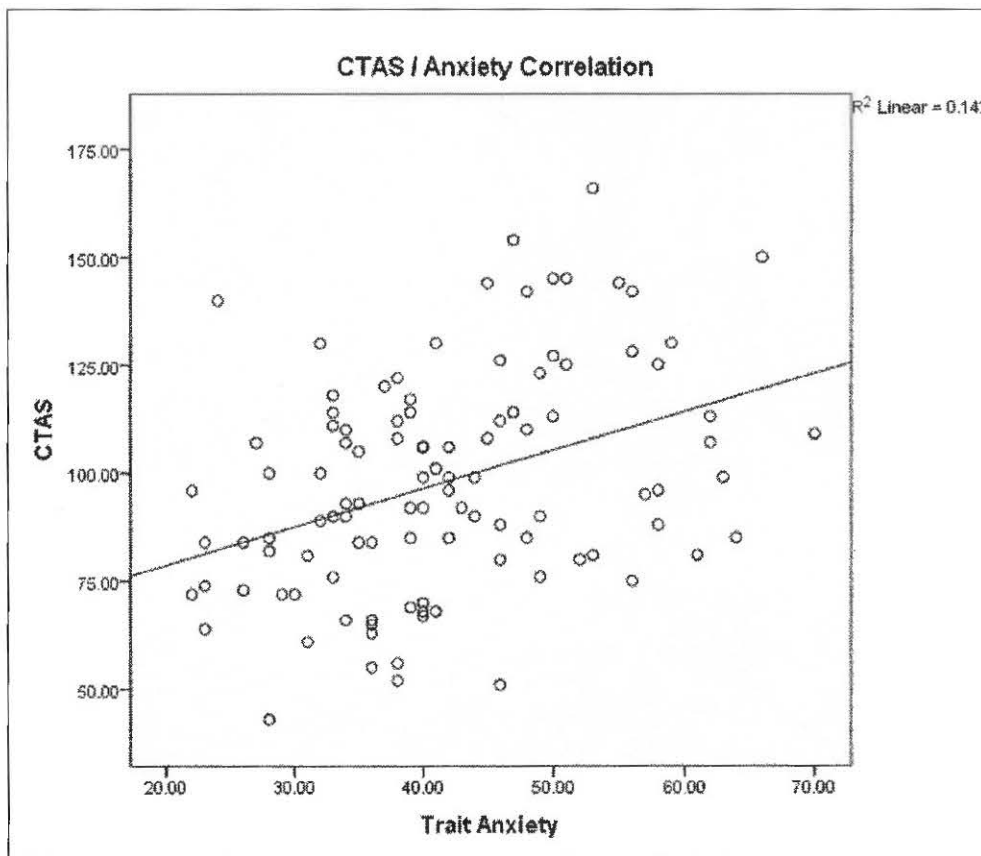
Figure 5 – Mobile phone addiction score and trait anxiety scatter gram

The most common reason cited for initially not wanting to participate in the separation experiment was a need to be contactable all the time (26%). Other common reasons cited were: "No time to participate" (19%), "Unable go twelve hours without my phone" (14%) and "Prefer not to participate" (14%). A breakdown of the replies can be seen in Figure 6.

Reason	# Replies
Couldn't go twelve hours without phone	9
Need to be contactable all the time	17
Don't have time to participate	12
Prefer not to participate	9
Family commitments	4
Don't use phone enough to worry about it	2
Nothing in it for me	1
Work commitments	7
Unwilling to disclose address	1
Non profit commitment - hobby	1

Figure 6 – Reasons given for not participating in mobile phone separation

iii.   Demographic information

The average household size a participant reported being part of was 3.152 people (Min. = 1, Max. = 7, SD = 1.28). 67.6% of respondents were single, 17.1% were married, 14.3% were domestic partners and 1% were divorced.

Most respondent had attended college (40% Bachelor degree, 23% some college, 21% Master Degree). 61% were in full time employment, 21.9% were students, 8.6% were employed part time and 8.6% were unemployed. 24 different industries were represented in the sample.

On average, participants had owned a mobile phone for 9.3 years (SD = 1.1 years). 57% of all participants said they used their phones mainly for social calls and texts

only, 41% used their mobile phones for business and social purposes equally and 1.9% used their mobiles for business reasons exclusively. 30.5% of participants reported using their mobile phones mainly for voice calls, 56.2% used theirs primarily for text messages while 13.3.% used theirs mainly for mobile internet.

5. Discussion

The key aim of the study was to gather data to investigate the primary hypothesis, which stated: *Separating a person from their mobile phone will result in increased situational anxiety levels for the duration of the separation when compared with anxiety levels experienced when the mobile phone is available for use.* This hypothesis was not supported. Despite the fact that the data gathered was largely not statistically significant it does give an indication as to what happens when people are separated from their mobile phones.

i. *Mobile phone separation and anxiety*

When analysing the results of the anxiety questionnaires gathered from both the experiment group and the control group it was evident that the average scores for the experiment group were lower than those in the control group at every measurement point bar one. Using non-parametric analysis it was also shown that no significant difference between the control group and the experiment group was present at any point during the twelve hour separation. Not only were the average scores for the experiment group lower than the control group but they diminished over time with no sustained increase in anxiety evident for the duration of the separation. During the twelve hour period the average anxiety levels actually fell steadily for both groups.

This fall in anxiety levels, and the high completion rate for the experiment group, was unexpected when compared with the findings of Katz (2006) who found that many of his participants were unable to do without their mobile phones for even 4 hours. While anxiety was not measured in that study, its presence was implicit in the answers to the follow up questions asked in that study. The same drop out rate was not repeated in the current study.

Only one participant was unable to complete the twelve hours once it had begun. The reason given was to send out text messages to organise a meeting. Ling and Haddon

(2003) have previously argued that the hyper-coordination mobile phones facilitate will lead to a diminished capacity to function without it. This may be a real world example of this and demonstrates that for some people the mobile phone is their preferred, possibly only, way of organising gatherings.

The second hypothesis: "*Any increased anxiety levels experienced while a person is separated from their mobile phone, will reach peak levels at the beginning of the separation period*" was not supported as the primary hypothesis had not been supported. There are many indicators which make this a hypothesis worthy of further investigation. Average anxiety scores for the experiment group did spike immediately after separation and then tailed off during the separation period. Statistical analysis of the between group differences did not show any significant differences.

The failure of the direct comparison of data points dictated that a second analysis of the change in anxiety between measurements needed to be completed. This second analysis looked at the difference in anxiety scores at key time points. Anxiety scores at the beginning and the end of the experiment were only separated by twenty minutes with the variable being manipulated between groups between both points the turning off and on of the mobile phone respectively. This allowed a direct, between groups, comparison of anxiety changes during the period when the mobile phone was switched off.

On average the separation experiment group displayed almost 5 times the level of increase in anxiety during the switching off period than the control group, however, once again the statistical significance of this change was not great enough to support the apparent pattern. Similarly, the separation experiment group also displayed a greater reduction in anxiety after switching on their mobile phones although to a much lesser extent than the initial increase difference. The difference in reduction was not statistically significant.

As has been stated, the return rates for the separation experiment were not sufficient to perform parametric analysis on the returned data. Participants who did not return forms were sent emails asking them to provide reasons for not returning forms but very few replied. Those that did reply were vague in their replies, but most referred to a generic lack of time. The data which had previously been collected was analysed to determine if any underlying cause could be identified for this non-return rate. When

comparing the general anxiety levels for the separation group who had returned their forms with the separation group who had been sent forms but did not return them, a difference emerged. Those who had not returned their forms had an average general anxiety score which was less than the average for the group who had returned their forms. This difference was statistically significant. No such difference was present for the control group.

This difference in trait anxiety and its influence on attempting potentially difficult or fear inducing tasks is something that is not discussed in the STAI manuals or in any study that the author could find. A possible explanation could be that the open timeframe coupled with a low anxiety, or relaxed approach, led to some participants simply forgetting to complete the forms. Other possible explanations include attempting and failing to complete the twelve hours without switching on the mobile phone and subsequent embarrassment or belief that this was incorrect. As no further explanations from participants were forthcoming, it is a question that lacks a definitive explanation.

This study also sought to add to the literature on behavioural responses to the removal of a person's mobile phone. Laporta (2006) discussed the compulsive use of mobile phones. Her definition of addiction included the compulsive almost unconscious, checking for text messages and missed calls. This study gathered data from the separation group to indicate how many times the phone was checked during the time it was switched off. While the average numbers were not large, participants were definitely checking their mobile phones even though they were off.

Howard Rheingold (2004) theorised that over time, it would be the secondary features of mobile phones which people became most dependent on. The data gathered in this study does not support this view in terms of compulsive use. Even without the mobile phone being switched off, text messages are, in their nature asynchronous and so lend themselves to sporadic checking rather than immediate call to action use. They are also recognised as an important and much used part of Irish mobile phone use (ComReg, 2009) and so, unsurprisingly, are at the top of the most compulsively used features in this study. The fact that other uses such as reminders, alarms and emails ranked higher than voice calls both in compulsive use and in actual use mean that Rheingold's ideas may not be dismissed entirely.

When analysing the reported mobile phone usage patterns it is interesting to note that only a very small minority used their mobile phone for business exclusively. Social use and a mixture of uses were the most common replies.

The specific mobile phone features, which participants perceived as their most commonly used, indicated a higher than anticipated uptake for mobile internet. Text messaging was perceived as being the most popular. Voice calls were reported to be roughly half as popular as text messaging. Interestingly, when this is compared with the average actual usage data gathered from the control group we see that text messaging was used almost six times as frequently as voice calls. Also worthy of note is the fact that participants reported using their mobile phones as alarm clocks and for setting reminders as much as they reported using them for voice calls.

ii.   *Willingness to try mobile phone separation*

The results of this study indicate that 60% of people are unwilling to place themselves in a position where they could be required to go without their mobile phone for twelve hours. This figure is higher than that reported by Sanchez-Martinez and Ottero (18.2%) (2008) however they simply asked if their participants thought they could go one day without their mobile phones. The figure is also higher than that cited by Laporta (2006) who claims that 30% of Americans are unwilling to go without their mobile phones. It seems likely that the difference between these studies, apart from location, is that the possibility of participants having to support the answers with actions was more overtly stated in the questionnaire employed in this study when compared to the others cited above.

The closest comparison to actual separation studies that can be made to the current study is to the one reported by Katz (2006) where 12% of participants were unwilling even to try separation when the threat of actual separation was real. The 60% unwillingness found in the current study indicates a rise in unwillingness to be separated from out mobile phones. If we apply the standard substance dependence model (American Psychological Association, 2000) then this would appear to indicate that we have moved from the craving stage of addiction into the tolerance stage where sufferers are more unlikely to voluntarily go without their dependent substance. The

different populations used in each study make it impossible to draw this conclusion definitively, but it is an area worth exploring in further studies.

The average mobile phone dependence and abuse scores found in this study were slightly higher than reported by Merlo and Stone (2007). The significance of this is difficult to quantify as this study found a longer duration of mobile phone ownership and works with an Irish cohort as opposed to the American cohort used in the Merlo and Stone (2007) study.

When interpreting the results of the CTAS it is important to note that it has not been widely used in other studies. The rationale for its use in the current study was largely based on its close similarities to the approach taken by the DSM-IV-TR to classifying addiction through the 'abuse' and 'dependence' subscales. Other possible measures such as Bianci and Philips (2005) Mobile Phone Problem Use Scale (MPPUS) were considered but rejected in favour if the CTAS as they lacked the 'dependence' component which was important for the current study.

Using an online data gathering tool enabled this study to request more information when important questions were answered in a certain way. The willing to attempt separation question triggered additional questions if the answer given was in the negative. In this way data was gathered from the participants who did not wish to go without their mobile phones without the need to gather personal contact information. The reasons for not wanting to attempt separation were, for the most part, quite vague.

Insight into why people were unwilling to attempt the mobile phone separation is difficult to support. The most frequent responses were that participants needed to be contactable all the time, that they had no time to participate and that they needed to have their phone on constantly for work reasons. For some these reasons were certainly true, however the 60% unwillingness to attempt separation figure is so much higher than anticipated that other factors need to be examined.

The fact that, for ethical reasons, anxiety was specifically mentioned in the introduction may have turned an already undesirable situation into one that outweighs any curiosity they may have had about their chances of success, as one participant put it: "Dubious return for a difficult task". When that is combined with the sample choices which were provided in the online survey, it is possible that participants chose

the answer they thought was the most benign. Festinger (1957) theorises that, through what he called 'Cognitive dissonance' people will often report as fact that what they know to be untrue when trying to reconcile an answer with their self concept. This casts some doubt on the reasons reported by the 60% but the policy adopted by the author is to accept the answers provided by participants as that which they believe to be true.

Data relating to two of the initial hypothesis was gathered in the initial online questionnaire. Based on correlations reported by Merlo and Stone (2007) it was expected that a correlation between mobile phone dependence and anxiety would be found and this was found to be the case. The correlation found was only moderately significant and had many outliers however it does indicate that it is likely that there is a link between mobile phone dependence and anxiety.

Two main differences between this study and that conducted by Merlo and Stone (2007) need to be considered. Firstly the questionnaires were administered online in the current study as opposed to face to face in the Merlo and Stone (2007) study. Secondly, the CTAS was modified to appear more relevant to an Irish cohort. The differences were simply changing the words cell-phone to mobile phone, however potential cultural difference must be considered when making these comparisons.

The third hypothesis: *"People who agree to take part in a mobile phone separation experiment will have lower general anxiety levels than those who refuse to attempt separation from their mobile phones"*, based largely on Merlo and Stones (2007) work, was not supported. This was surprising due to the fact that the expected correlation between dependence and anxiety was moderately supported. It was interesting to note that no statistically significant link between willingness to attempt mobile phone separation and dependence could be shown with the current data. On average the dependence figures were higher for the group who declined to participate in the mobile phone separation experiment than the group who agreed to it, but not to a significant degree.

When examining the data which relates to the fourth hypothesis, it is a similar outcome to hypothesis three. Hypothesis four states: *"People who agree to take part in a mobile phone separation experiment will have lower mobile phone dependence scores than those who refuse to attempt separation from their mobile phones"*. This

hypothesis was also not supported. Average anxiety scores were shown to be higher for the group who declined to take part in the separation experiment when compared to the control group but this could not be supported to any statistical significance.

A combination of factors may serve to partially explain these results. The difficulty experienced when gathering participants willing to expend the time required to fill out the extensive initial questionnaire, impacted the overall numbers of participants and left it less likely get statistically significant results. A secondary factor, around which the design of the study was based, was the much higher unwillingness to participate in the separation experiment than that indicated by the literature (Katz, 2006; Laporta, 2006; Sanchez-Martinez & Ottero, 2008). This meant that results backed up by large volumes of participant data were not going to be possible for this study.

iii. Study limitations

It is not possible to verify that the participants in the current study actually switched off their mobile phones when requested to or not. Also, in order to maintain ecological validity, the data gathering was done in the participant's regular environment and not under the control of the researcher. This may mean that there were other factors at play which may have impacted on participants' anxiety levels during the twelve hours. Both groups were requested to complete the experiments during a time where they could not foresee a reason to use their mobile phones and as such this should have helped to normalise the results. For the purposes of this study it will be assumed that the participants were truthful in their replies and that no external distractions were present.

Participants were free to utilise any other form of communication, including email and instant messaging during the separation period. It is possible that another reason for the lack of increase in reported anxiety levels for this group is because the separation period was of their own choosing and they had time to plan and organise for the lack of a mobile phone. This seems unlikely however, as the findings of Diamond et al (2008) were based on planned romantic partner separations and their results clearly showed an increase in anxiety for the duration of the separation. Related to this, Vincent's (2006) assertion that the mobile phone has become an 'emotional conduit'

should possibly be re-examined to include more forms of technology than just the mobile phone.

The reported levels of education were skewed towards the higher education sector. Although the range of industries in which participants worked was quite wide, the percentage of participants who had been to third level education (greater than 84%) in this study was much higher than the 15.1% national Irish average reported by the CSO (2006). This bias may be explained by the online methods employed when publicising the request for volunteers or possibly because of the snowball and self selection methods of recruitment used in this study.

iv.   *Recommendations for future research*

While neither of the hypotheses relating to mobile phone dependence or general anxiety as predictors of willingness to attempt mobile phone separation was supported by the data gathered in this study, further investigation with larger populations is needed to explain the presence of the not statistically significant, yet indicative data.

Larger sample sizes should also help with the higher than anticipated percentage of participants who were unwilling to attempt separation from their mobile phones. This meant that the chances of getting statistically significant results from the separation experiment were reduced and the use of non parametric analysis, while appropriate, was not ideal. Larger cohorts of participants should allow for parametric analyses to be carried out.

It was difficult to recruit participants for this study. The many partial replies to the initial questionnaire shows that some participants were not willing to spend the ten minutes required to fill out the online questionnaire. It was not possible to contact these participants so it is not possible to infer the reason for the high abandonment rate. It does indicate that the ethical precautions taken, allowing participants to leave at any stage, were observed and availed of by some participants. Future studies should adopt this approach.

As has been pointed out the use of the CTAS was not ideal due to the relatively low number of studies it has previously been used in. Possible directions for further

research would be in a comparison of the various mobile phone addiction and misuse scales used in previous studies (Bianci & Philips, 2005; Merlo & Stone, 2007; Ha et al, 2008).

A shortcoming of this study was the lack of follow up questions posed to the participants in the separation experiments. A free text area was left for those who could not complete the twelve hours, but was not provided for those who successfully completed the separation. Despite this one participant wrote on the last anxiety questionnaire of her surprise and pride in completing the twelve hours without her phone. Further studies should ensure that adequate space is provided for all participants to provide feedback.

The significant link between participants having low trait anxiety and not returning the separation booklets is one that runs counter intuitively to conventional logic. As there was little literature to fall back on to explain its significance, it warrants further investigation.

v. *Conclusions*

In general it appears that Irish people are largely unwilling to be separated from their mobile phones. It is difficult to even get participants to complete a questionnaire about their attitudes to mobile phones when mention of potential separation is made. In conjunction to the difficulty in obtaining participants it appears that the Cellular Technologies Addiction Scale (CTAS) has not been validated sufficiently on an Irish population to predict willingness to be separated from their mobile phone.

The use of mobile phones for purposes outside that which they were originally designed, alarm clock, email client etc., is on the rise. This is possibly due to the emerging popularity of the apple iPhone and other smartphones. As similar technologies become more affordable and widespread then, in this researchers opinion, it is likely that mobile phones will be perceived as even more essential to our daily lives.

Drawing from the data collected during this study it would appear that a person who has been separated from their mobile phone in a planned manner will not be any more

anxious than a person who is firmly connected and may actually be less anxious after a period of twelve hours without their phones.

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7. Appendix A

i. Cellular Technologies Addiction Scale

Please rate these items using the following scale:

1 = **Strongly Disagree**

2 = **Somewhat Disagree**

3 = **Neither Agree Nor Disagree**

4 = **Somewhat Agree**

5 = **Strongly Agree**

1. I have gotten into trouble at work or school because of my mobile phone use.
2. My mobile phone use has caused me problems in a relationship.
3. I have lost a relationship because of my mobile phone use.
4. I have used my mobile phone in places where it is considered rude to do so.
5. I spend more money on my mobile phone than I can easily afford.
6. I have almost caused an accident because of my mobile phone use.
7. I have used my mobile phone when I knew it was dangerous to do so.
8. I have used my mobile phone in places where they are banned.
9. I have continued to use my mobile phone even when someone asked me to stop.
10. I have been in an accident because of my mobile phone use.
11. I have been embarrassed by my mobile phone ringing at an inappropriate place/time.
12. At times, I find myself using my mobile phone instead of spending time with people who are important to me and want to spend time with me.
13. People tell me I spend too much time using my mobile phone.

14. The amount of time I spend using my mobile phone keeps me from doing other important work.

15. I have a hard time relaxing if my mobile phone does not have good signal strength.

16. I think I might spend too much time on my mobile phone.

17. I check to make sure my phone is on if I have not recently received a call.

18. I feel anxious or upset if I forget my mobile phone at home.

19. I would not want to go on vacation somewhere that I could not use my mobile phone.

20. I sometimes think that I might be "addicted" to my mobile phone.

21. I never turn off my mobile phone.

22. I feel safer when I have my mobile phone with me.

23. I cannot imagine my life without a mobile phone.

24. I have lost a job because of my mobile phone use.

25. I have used my mobile phone when I knew I should be sleeping.

26. When I feel uncomfortable in a situation, I use my mobile phone to relieve discomfort.

27. I have used my mobile phone when I knew I should be doing work/schoolwork.

28. I have ignored the people I'm with in order to use my mobile phone.

29. I sometimes wish I could get rid of my mobile phone.

30. When I am not using my mobile phone, I am thinking about using it or planning the next time I can use it.

31. Recently, I have been increasing the amount of time I spend using my mobile phone.

32. I need more time using my mobile phone to feel satisfied than I used to need.

33. When I decrease the amount of time spent using my mobile phone I feel less satisfied.

34. When I stop using my mobile phone, I get moody and irritable.

35. I think I might be spending too much time using my mobile phone.

36. It would be very difficult, emotionally, to give up my mobile phone.

37. When I stop using my mobile phone because it is interfering with my life, I usually return to it.

38. I have thought in the past that it is not normal to spend as much time using a mobile phone as I do.

Cellular Technology Abuse Subscale: items 1-14

Cellular Technology Dependence Subscale: items 15-38

8. Appendix B

i.   State-Trait Anxiety Index for Adults (Form Y-1)

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-1

Please provide the following information:

Name_____ Date_____

Age_____   Gender (circle one): M / F

DIRECTIONS:

A number of statements which people have used to describe themselves are given below.

Read each statement and then blacken the appropriate circle to the right of the statement

to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong

answers. Do not spend too much time on any one statement but give the answer which

seems to describe your present feelings best.

1 = Not at all

2 = Somewhat

3 = Moderately so

4 = Very much so

1. I feel calm 1 2 3 4

2. I feel secure..1 2 3 4

3. I am tense 1 2 3 4

4. I feel strained 1 2 3 4

5. I feel at ease 1 2 3 4

6. I feel upset..1 2 3 4

7. I am presently worrying over possible misfortunes...1 2 3 4

8. I feel satisfied..1 2 3 4

9. I feel frightened..1 2 3 4

10. I feel comfortable.. 1 2 3 4

11. I feel self-confident.. 1 2 3 4

12. I feel nervous 1 2 3 4

13. I am jittery... 1 2 3 4

14. I feel indecisive... 1 2 3 4

15. I am relaxed.. 1 2 3 4

16. I feel content 1 2 3 4

17. I am worried...1 2 3 4

18. I feel confused.. 1 2 3 4

19. I feel steady.. 1 2 3 4

20. I feel pleasant ....

1 2 3 4

    ii.   *State-Trait Anxiety Index for Adults (Form Y-2)*

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

Please provide the following information:

Name_____ Date_____

Age_____   Gender (circle one): M / F

DIRECTIONS

A number of statements which people have used to describe

themselves are given below. Read each statement and then blacken in the

appropriate circle to the right of the statement to indicate you *generally* feel.

1 = Not at all

2 = Somewhat

3 = Moderately so

4 = Very much so

21. I feel pleasant 1 2 3 4

22. I feel nervous and restless.. 1 2 3 4

23. I feel satisfied with myself..1 2 3 4

24. I wish I could be as happy as others seem to be 1 2 3 4

25. I feel like a failure... 1 2 3 4

26. I feel rested... 1 2 3 4

27. I am "calm, cool, and collected"... 1 2 3 4

28. I feel that difficulties are piling up so that I cannot overcome them............................ 1 2 3 4

29. I worry too much over something that really doesn't matter............ .... 1 2 3 4

30. I am happy.. 1 2 3 4

31. I have disturbing thoughts... 1 2 3 4

32. I lack self-confidence... 1 2 3 4

33. I feel secure.. 1 2 3 4

34. I make decisions easily 1 2 3 4

35. I feel inadequate... 1 2 3 4

36. I am content.. 1 2 3 4

37. Some unimportant thought runs through my mind and bothers me............................ 1 2 3 4

38. I take disappointments so keenly that I can't put them out of my mind 1 2 3 4

39. I am a steady person.. 1 2 3 4

40. I get in a state of tension and turmoil as I think over my recent concerns and interests

1 2 3 4

9. Appendix C

i.   *Online Questionaire*

[Informed Consent Form]

[CTAS]

[STAI Form Y-2]

```
================================================
 Separation experiment information
================================================
```

60. Do you wish to participate in the mobile phone separation
experiment?

Please note:

You may be required to be separated from your mobile phone for 12
hours as part of this experiment. Your participation is voluntary and
you can withdraw at any stage.

    ( ) Yes
    ( ) No


```
================================================
 Participant information
================================================
```

61. What is your gender?
    ( ) Male
    ( ) Female

62. In what year were you born?

_____

63. What is the highest level of education you have completed?

_____

64. In which industry do you work?

_____

65. What is your employment status?
    ( ) Full-time
    ( ) Part-time
    ( ) Student
    ( ) Retired
    ( ) Unemployed

66. Are you self-employed?
    ( ) Yes
    ( ) No

67. What is your marital status?
    ( ) Single
    ( ) Living as domestic partners
    ( ) Married
    ( ) Divorced
    ( ) Widowed

68. How many people live in your household?

    _____

Please fill out your contact info:
==

69. First Name

    _____

70. Last Name

    _____

71. Title

    _____

72. Company Name

    _____

73. Street Address

    _____

74. Apt/Suite/Office

    _____

75. City

    _____

76. State

    _____

77. Postal Code

    _____

78. Country

    _____

79. Email Address

_____

80. Phone Number

_____

81. Fax Number

_____

82. Mobile Phone

_____

83. Website URL

_____

84. How do you prefer to be contacted?
    ( ) Phone
    ( ) Email
    ( ) Postal Mail

85. How long have you have owned a cell phone for?

_____

86. Please indicate what you primarily use your cell phone for
    ( ) Social
    ( ) Business
    ( ) Social and Business equally

87. Do you MOSTLY
    ( ) Use your phone for voice calls
    ( ) Use your phone for text messaaging (SMS)
    ( ) Use your phone for mobile internet access

/**Optional question if participant refused separation*/

87. Please indicate the main reason for not participating in the 12 hour experiment

===
 Thank You!
===

[Debriefing form]

10. Appendix D

i. Participant Instructions: Mobile Phone Separation Experiment (Control)

Important information

Thank you for taking part in this study. All data gathered in the study will be anonymous, confidential and for research purposes only. The findings of the research may be published in the form of journal articles and conference proceedings, but your individual data will not be identifiable in the published accounts. You are free to withdraw from the study at any time.

For this part of the experiment we will be examining psychological indicators associated with mobile phone use levels in a typical 12 hour period. Please try to follow all instructions exactly. If you are unable to complete any part, then please indicate this when filling out the forms attached.

You will be required to choose a 12 hour period during the next 2 weeks where you will be awake and **do not** anticipate any reason why it will be necessary for you to be able to make or receive phone calls or text messages on your mobile phone.

You are requested **not to separate** yourself from your mobile phone. Please use it as normal to make or receive calls or text messages.

A checklist is provided after these instructions; please use this to ensure you are completing all the tasks in order. Once you have completed the tasks and have filled out all the forms, **please return them** using the postage paid envelope provided.

If you have any questions then please contact me at: MarkSiggins@student.iadt.ie

Instructions

11. Choose a 12 hour period where you **do not** anticipate any reason why it will be necessary for you to be able to make or receive phone calls or text messages on your mobile phone.

11. **10 minutes before** your chosen 12 hour period please fill out the pre-session self evaluation.

 10. **During** the 12 hour period, please uses the self-report table to record any time you take out your mobile phone.

11. **10 minutes after the start** of the 12 hours please fill out the 10 minute self evaluation.

11. **6 hours after the start** of the 12 hours, please fill out the 6-hour self evaluation.

11. **10 minutes before the end** of the 12 hours, please fill out the pre session end self evaluation.

11. **Immediately after** the 12 hours have elapsed, please fill out the post-separation self evaluation.

11. Ensure you have **read** and understood the debriefing form.

11. Your participation is completed at this point. Please **return the completed forms** using the postage paid envelope provided as soon as possible. Thanks!

Study Checklist

Participant Name: _____

Date chosen for experiment: _____

Time Experiment started: _____

Time Experiment ended: _____

	Instruction	**Completed**
1.	Choose 12 hours where information will be recorded	☐
2.	10 minutes before the start, fill out pre-session self evaluation.	☐
3.	10 minutes after the start, fill out 10 minute self evaluation.	☐
4.	Ensure you are recording each time you check your phone. (Please use the form on the back page)	☐
5	6 hours after the start, fill out the 6 hour self evaluation.	☐
6.	10 minutes before the end of 12 hours, fill out the pre-session end self evaluation.	☐
7	10 minutes after the end of 12 hours, fill out the post-session end self evaluation.	☐
8.	Thoroughly read the debriefing form.	☐
9.	Return all forms using the postage paid envelope.	☐

Pre-Session Self Evaluation

Please fill out this form 10 minutes <u>before</u> the 12 hour period you have chosen begins

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then tick the box to the right of the statement to indicate how you feel *right* now, that is, *at this moment.* There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at all	Somewhat	Moderately so	Very much so
I feel calm	☐	☐	☐	☐
I feel secure	☐	☐	☐	☐
I am tense	☐	☐	☐	☐
I feel strained	☐	☐	☐	☐
I feel at ease	☐	☐	☐	☐
I feel upset	☐	☐	☐	☐
I am presently worrying over possible misfortunes	☐	☐	☐	☐
I feel satisfied	☐	☐	☐	☐
I feel frightened	☐	☐	☐	☐
I feel comfortable	☐	☐	☐	☐
I feel self-confident	☐	☐	☐	☐
I feel nervous	☐	☐	☐	☐
I am jittery	☐	☐	☐	☐
I feel indecisive	☐	☐	☐	☐
I am relaxed	☐	☐	☐	☐
I feel content	☐	☐	☐	☐
I am worried	☐	☐	☐	☐
I feel confused	☐	☐	☐	☐
I feel steady	☐	☐	☐	☐
I feel pleasant	☐	☐	☐	☐

A Study of Anxiety Associated with Mobile Phone Separation

10 Minute Self Evaluation

Please fill out this form 10 minutes <u>after</u> the 12 hour period you have chosen has begun.

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then tick the box to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at all	Somewhat	Moderately so	Very much so
I feel calm	☐	☐	☐	☐
I feel secure	☐	☐	☐	☐
I am tense	☐	☐	☐	☐
I feel strained	☐	☐	☐	☐
I feel at ease	☐	☐	☐	☐
I feel upset	☐	☐	☐	☐
I am presently worrying over possible misfortunes	☐	☐	☐	☐
I feel satisfied	☐	☐	☐	☐
I feel frightened	☐	☐	☐	☐
I feel comfortable	☐	☐	☐	☐
I feel self-confident	☐	☐	☐	☐
I feel nervous	☐	☐	☐	☐
I am jittery	☐	☐	☐	☐
I feel indecisive	☐	☐	☐	☐
I am relaxed	☐	☐	☐	☐
I feel content	☐	☐	☐	☐
I am worried	☐	☐	☐	☐
I feel confused	☐	☐	☐	☐
I feel steady	☐	☐	☐	☐
I feel pleasant	☐	☐	☐	☐

6 Hour Self Evaluation

Please fill out this form 6 hours <u>after</u> the 12 hour period you have chosen has begun.

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then tick the box to the right of the statement to indicate how you feel *right* now, that is, *at this moment.* There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at all	Somewhat	Moderately so	Very much so
I feel calm	☐	☐	☐	☐
I feel secure	☐	☐	☐	☐
I am tense	☐	☐	☐	☐
I feel strained	☐	☐	☐	☐
I feel at ease	☐	☐	☐	☐
I feel upset	☐	☐	☐	☐
I am presently worrying over possible misfortunes	☐	☐	☐	☐
I feel satisfied	☐	☐	☐	☐
I feel frightened	☐	☐	☐	☐
I feel comfortable	☐	☐	☐	☐
I feel self-confident	☐	☐	☐	☐
I feel nervous	☐	☐	☐	☐
I am jittery	☐	☐	☐	☐
I feel indecisive	☐	☐	☐	☐
I am relaxed	☐	☐	☐	☐
I feel content	☐	☐	☐	☐
I am worried	☐	☐	☐	☐
I feel confused	☐	☐	☐	☐
I feel steady	☐	☐	☐	☐
I feel pleasant	☐	☐	☐	☐

Pre Session End Self Evaluation

Please fill out this form 10 minutes <u>before</u> the 12 hour period you have chosen has ended.

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then tick the box to the right of the statement to indicate how you feel *right* now, that is, *at this moment.* There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at all	Somewhat	Moderately so	Very much so
I feel calm	☐	☐	☐	☐
I feel secure	☐	☐	☐	☐
I am tense	☐	☐	☐	☐
I feel strained	☐	☐	☐	☐
I feel at ease	☐	☐	☐	☐
I feel upset	☐	☐	☐	☐
I am presently worrying over possible misfortunes	☐	☐	☐	☐
I feel satisfied	☐	☐	☐	☐
I feel frightened	☐	☐	☐	☐
I feel comfortable	☐	☐	☐	☐
I feel self-confident	☐	☐	☐	☐
I feel nervous	☐	☐	☐	☐
I am jittery	☐	☐	☐	☐
I feel indecisive	☐	☐	☐	☐
I am relaxed	☐	☐	☐	☐
I feel content	☐	☐	☐	☐
I am worried	☐	☐	☐	☐
I feel confused	☐	☐	☐	☐
I feel steady	☐	☐	☐	☐
I feel pleasant	☐	☐	☐	☐

Post Session End Self Evaluation

Please fill out this form 10 minutes <u>after</u> the 12 hour period you have chosen has ended.

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then tick the box to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at all	Somewhat	Moderately so	Very much so
I feel calm	☐	☐	☐	☐
I feel secure	☐	☐	☐	☐
I am tense	☐	☐	☐	☐
I feel strained	☐	☐	☐	☐
I feel at ease	☐	☐	☐	☐
I feel upset	☐	☐	☐	☐
I am presently worrying over possible misfortunes	☐	☐	☐	☐
I feel satisfied	☐	☐	☐	☐
I feel frightened	☐	☐	☐	☐
I feel comfortable	☐	☐	☐	☐
I feel self-confident	☐	☐	☐	☐
I feel nervous	☐	☐	☐	☐
I am jittery	☐	☐	☐	☐
I feel indecisive	☐	☐	☐	☐
I am relaxed	☐	☐	☐	☐
I feel content	☐	☐	☐	☐
I am worried	☐	☐	☐	☐
I feel confused	☐	☐	☐	☐
I feel steady	☐	☐	☐	☐
I feel pleasant	☐	☐	☐	☐

THANK YOU VERY MUCH FOR TAKING PART IN THIS STUDY.

The study in which you have participated in was designed to investigate mobile phone dependence and separation anxiety.

If you have questions about this study or you wish to have your data removed from the study at any time, please contact Mark Siggins, at the following e-mail address: MarkSiggins@student.iadt.ie

We thank you sincerely for contributing and assure you that your data is confidential and anonymous, and if published the data will not be in any way identifiable as yours. Your contribution is very useful for investigating mobile phone dependence and anxiety.

If you have been affected by the content of this study in any way, the organizations below may be of assistance:

International

http://www.isad.org.uk – International Society for Affective Disorders

http://www.nomorepanic.co.uk – Anxiety help groups

Irish

http://www.socialanxietyireland.com - Social Anxiety Ireland

http://www.vhi.ie/hfiles/hf-237.jsp - VHI anxiety advice

http://www.aboutcounselling.ie/category/anxiety-counselling/ - Anxiety services in Dublin.

Mobile Phone Separation Self-Report Table

During the mobile phone separation period, even if the phone is switched off, you may find yourself taking your phone out to check for messages, missed calls etc.

Please fill out an entry for every time you take your phone out, or feel you would normally take your phone out. Please indicate how important you feel the reason for checking your phone was as well as what you were looking for.

Low	Importance	High	Reason	Details
0 1 2 3 4 5 6 7 8 9 10				
			Call / SMS/ Other	
			Call / SMS/ Other	
			Call / SMS/ Other	
			Call / SMS/ Other	
			Call / SMS/ Other	
			Call / SMS/ Other	
			Call / SMS/ Other	

11. Appendix E

i. Participant Instructions: Mobile Phone Separation Experiment (Separation)

Important information

Thank you for taking part in this study. All data gathered in the study will be anonymous, confidential and for research purposes only. The findings of the research may be published in the form of journal articles and conference proceedings, but your individual data will not be identifiable in the published accounts. You are free to withdraw from the study at any time.

For this part of the experiment we will be examining psychological indicators associated with mobile phone separation for a 12 hour period. Please try to follow all instructions exactly. If you are unable to complete any part, then please indicate this when filling out the forms attached.

You will be required to choose a 12 hour period during the next 2 weeks where you will be awake and where you **do not** anticipate any reason why it will be necessary for you to be able to make or receive phone calls or text messages on your mobile phone.

You are requested **to switch off** your mobile phone for the 12 hour study period. Please **do not place yourself or others at risk** by doing this. If you feel overly uncomfortable or need to switch on your phone for any reason during the 12 hour study duration then please do so and **record this** on the self report questionnaire.

A checklist is provided after the instructions; please use this to ensure you are completing all the tasks in order. Once you have completed the tasks and have filled out all the forms, **please return them** using the postage paid envelope provided.

If you have any questions then please contact me at: MarkSiggins@student.iadt.ie

Instructions

1. Choose a 12 hour period where you **do not** anticipate any reason why it will be necessary for you to be able to make or receive phone calls or text messages on your mobile phone.

2. **10 minutes before** your chosen 12 hour period please fill out the pre-session self evaluation.

3. Please **power off** your mobile phone at the start of your chosen 12 hours. Please carry the phone with you as normal

   - **During** the 12 hour period, please use the self-report table to record any time you take out your mobile phone, or want to, and a brief explanation of the reason.

4. **10 minutes after the start** of the 12 hours please fill out the 10 minute self evaluation

5. **6 hours after the start** of the 12 hours please fill out the 6 hour self evaluation.

6. **10 minutes before the end** of the 12 hours, please fill out the pre session end self evaluation.

7. After the 12 hour duration has been completed please **Power on** your mobile phone.

8. **Immediately after** the 12 hours have elapsed, please fill out the post session end self evaluation.

9. Ensure you have **read** and understood the debriefing form.

10. Your participation is completed at this point. Please **return the completed forms** using the postage paid envelope provided as soon as possible. Thanks!

Study Checklist

Participant Name: Time Experiment started:

_____   _____

Date chosen for experiment: Time Experiment ended:

_____   _____

Instruction	Completed
1. Choose 12 hours where information will be recorded	☐
2. 10 minutes before the start, fill out pre-session self evaluation.	☐
2. Switch off your mobile phone.	☐
3. 10 minutes after the start, fill out 10 minute self evaluation.	☐
4. Ensure you are recording each time you check your phone. (Please use the form on the back page)	☐
5 6 hours after the start, fill out the 6 hour self evaluation.	☐
6. 10 minutes before the end of 12 hours, fill out the pre-session end self evaluation.	☐
7. Switch on your mobile phone.	☐
7 10 minutes after you switch on your phone, fill out the post-session end self evaluation.	☐
8. Thoroughly read the debriefing form.	☐
9. Return all forms using the postage paid envelope.	☐

Was your mobile phone switched on at any stage during 12 hour separation?

(Circle one) Yes / No

Note: Switching on your phone does not invalidate the study. Your honesty is appreciated.

If 'Yes', please record how long the mobile phone had been off for and if possible a brief explanation as to why the phone was switched on:

_____

_____

_____

Pre-Session Self Evaluation

Please fill out this form 10 minutes <u>before</u> the 12 hour period you have chosen begins

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then tick the box to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at all	Somewhat	Moderately so	Very much so
I feel calm	☐	☐	☐	☐
I feel secure	☐	☐	☐	☐
I am tense	☐	☐	☐	☐
I feel strained	☐	☐	☐	☐
I feel at ease	☐	☐	☐	☐
I feel upset	☐	☐	☐	☐
I am presently worrying over possible misfortunes	☐	☐	☐	☐
I feel satisfied	☐	☐	☐	☐
I feel frightened	☐	☐	☐	☐
I feel comfortable	☐	☐	☐	☐
I feel self-confident	☐	☐	☐	☐
I feel nervous	☐	☐	☐	☐
I am jittery	☐	☐	☐	☐
I feel indecisive	☐	☐	☐	☐
I am relaxed	☐	☐	☐	☐
I feel content	☐	☐	☐	☐
I am worried	☐	☐	☐	☐
I feel confused	☐	☐	☐	☐
I feel steady	☐	☐	☐	☐
I feel pleasant	☐	☐	☐	☐

10 Minute Self Evaluation

Please fill out this form 10 minutes <u>after</u> the 12 hour period you have chosen has begun.

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then tick the box to the right of the statement to indicate how you feel *right* now, that is, *at this moment.* There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at all	Somewhat	Moderately so	Very much so
I feel calm	☐	☐	☐	☐
I feel secure	☐	☐	☐	☐
I am tense	☐	☐	☐	☐
I feel strained	☐	☐	☐	☐
I feel at ease	☐	☐	☐	☐
I feel upset	☐	☐	☐	☐
I am presently worrying over possible misfortunes	☐	☐	☐	☐
I feel satisfied	☐	☐	☐	☐
I feel frightened	☐	☐	☐	☐
I feel comfortable	☐	☐	☐	☐
I feel self-confident	☐	☐	☐	☐
I feel nervous	☐	☐	☐	☐
I am jittery	☐	☐	☐	☐
I feel indecisive	☐	☐	☐	☐
I am relaxed	☐	☐	☐	☐
I feel content	☐	☐	☐	☐
I am worried	☐	☐	☐	☐
I feel confused	☐	☐	☐	☐
I feel steady	☐	☐	☐	☐
I feel pleasant	☐	☐	☐	☐

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6 Hour Self Evaluation

Please fill out this form 6 hours <u>after</u> the 12 hour period you have chosen has begun.

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then tick the box to the right of the statement to indicate how you feel *right* now, that is, *at this moment.* There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at all	Somewhat	Moderately so	Very much so
I feel calm	☐	☐	☐	☐
I feel secure	☐	☐	☐	☐
I am tense	☐	☐	☐	☐
I feel strained	☐	☐	☐	☐
I feel at ease	☐	☐	☐	☐
I feel upset	☐	☐	☐	☐
I am presently worrying over possible misfortunes	☐	☐	☐	☐
I feel satisfied	☐	☐	☐	☐
I feel frightened	☐	☐	☐	☐
I feel comfortable	☐	☐	☐	☐
I feel self-confident	☐	☐	☐	☐
I feel nervous	☐	☐	☐	☐
I am jittery	☐	☐	☐	☐
I feel indecisive	☐	☐	☐	☐
I am relaxed	☐	☐	☐	☐
I feel content	☐	☐	☐	☐
I am worried	☐	☐	☐	☐
I feel confused	☐	☐	☐	☐
I feel steady	☐	☐	☐	☐
I feel pleasant	☐	☐	☐	☐

Pre Session End Self Evaluation

Please fill out this form 10 minutes <u>before</u> the 12 hour period you have chosen has ended.

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then tick the box to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at all	Somewhat	Moderately so	Very much so
I feel calm	☐	☐	☐	☐
I feel secure	☐	☐	☐	☐
I am tense	☐	☐	☐	☐
I feel strained	☐	☐	☐	☐
I feel at ease	☐	☐	☐	☐
I feel upset	☐	☐	☐	☐
I am presently worrying over possible misfortunes	☐	☐	☐	☐
I feel satisfied	☐	☐	☐	☐
I feel frightened	☐	☐	☐	☐
I feel comfortable	☐	☐	☐	☐
I feel self-confident	☐	☐	☐	☐
I feel nervous	☐	☐	☐	☐
I am jittery	☐	☐	☐	☐
I feel indecisive	☐	☐	☐	☐
I am relaxed	☐	☐	☐	☐
I feel content	☐	☐	☐	☐
I am worried	☐	☐	☐	☐
I feel confused	☐	☐	☐	☐
I feel steady	☐	☐	☐	☐
I feel pleasant	☐	☐	☐	☐

Post Session End Self Evaluation

Please fill out this form 10 minutes after the 12 hour period you have chosen has ended.

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then tick the box to the right of the statement to indicate how you feel *right* now, that is, *at this moment.* There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at all	Somewhat	Moderately so	Very much so
I feel calm	☐	☐	☐	☐
I feel secure	☐	☐	☐	☐
I am tense	☐	☐	☐	☐
I feel strained	☐	☐	☐	☐
I feel at ease	☐	☐	☐	☐
I feel upset	☐	☐	☐	☐
I am presently worrying over possible misfortunes	☐	☐	☐	☐
I feel satisfied	☐	☐	☐	☐
I feel frightened	☐	☐	☐	☐
I feel comfortable	☐	☐	☐	☐
I feel self-confident	☐	☐	☐	☐
I feel nervous	☐	☐	☐	☐
I am jittery	☐	☐	☐	☐
I feel indecisive	☐	☐	☐	☐
I am relaxed	☐	☐	☐	☐
I feel content	☐	☐	☐	☐
I am worried	☐	☐	☐	☐
I feel confused	☐	☐	☐	☐
I feel steady	☐	☐	☐	☐
I feel pleasant	☐	☐	☐	☐

THANK YOU VERY MUCH FOR TAKING PART IN THIS STUDY.

The study in which you have participated in was designed to investigate mobile phone dependence and separation anxiety.

If you have questions about this study or you wish to have your data removed from the study at any time, please contact Mark Siggins, at the following e-mail address: MarkSiggins@student.iadt.ie

We thank you sincerely for contributing and assure you that your data is confidential and anonymous, and if published the data will not be in any way identifiable as yours. Your contribution is very useful for investigating mobile phone dependence and anxiety.

If you have been affected by the content of this study in any way, the organizations below may be of assistance:

International

http://www.isad.org.uk – International Society for Affective Disorders

http://www.nomorepanic.co.uk – Anxiety help groups

Irish

http://www.socialanxietyireland.com - Social Anxiety Ireland

http://www.vhi.ie/hfiles/hf-237.jsp - VHI anxiety advice

http://www.aboutcounselling.ie/category/anxiety-counselling/ - Anxiety services in Dublin.

Mobile Phone Separation Self-Report Table

During the mobile phone separation period, even if the phone is switched off, you may find yourself taking your phone out to check for messages, missed calls etc.

Please fill out an entry for every time you take your phone out, or feel you would normally take your phone out. Please indicate how important you feel the reason for checking your phone was as well as what you were looking for.

Low			Importance						High		Reason	Details
0	1	2	3	4	5	6	7	8	9	10		
											Call / SMS/ Other	
											Call / SMS/ Other	
											Call / SMS/ Other	
											Call / SMS/ Other	
											Call / SMS/ Other	
											Call / SMS/ Other	
											Call / SMS/ Other	