A PSYCHOSOCIAL APPROACH TO UNDERSTANDING YOUNG AUSTRALIANS’ MOBILE PHONE BEHAVIOUR

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Keywords

Mobile phone, Australia, youth, social psychology, self-identity, social identity, need to belong, self-esteem, addiction, behaviour.
Abstract

This thesis by publication contributes to our knowledge of psychological factors underlying a modern day phenomenon, young people’s mobile phone behaviour. Specifically, the thesis reports a PhD program of research which adopted a social psychological approach to explore mobile phone behaviour among young Australians aged between 15 and 24 years. A particular focus of the research program was to explore both the cognitive and behavioural aspects of young people’s mobile phone behaviour which for the purposes of this thesis is defined as mobile phone involvement. The research program comprised three separate stages which were developmental in nature, in that, the findings of each stage of the research program informed the next.

The overarching goal of the program of research was to improve our understanding of the psychosocial factors influencing young people’s mobile phone behaviour. To achieve this overall goal, there were a number of aims to the research program which reflect the developmental nature of this thesis. Given the limited research into the mobile phone behaviour in Australia, the first two aims of the research program were to explore patterns of mobile phone behaviour among Australian youth and explore the social psychological factors relating to their mobile phone behaviour. Following this exploration, the research program sought to develop a measure which captures the cognitive and behavioural aspects of mobile phone behaviour. Finally, the research program aimed to examine and differentiate the psychosocial predictors of young people’s frequency of mobile phone use and their level of involvement with their mobile phone.
Both qualitative and quantitative methodologies were used throughout the program of research. Five papers prepared during the three stages of the research program form the bulk of this thesis. The first stage of the research program was a qualitative investigation of young people’s mobile phone behaviour. Thirty-two young Australians participated in a series of focus groups in which they discussed their mobile phone behaviour. Thematic data analysis explored patterns of mobile phone behaviour among young people, developed an understanding of psychological factors influencing their use of mobile phones, and identified that symptoms of addiction were emerging in young people’s mobile phone behaviour. Two papers (Papers 1 and 2) emanated from this first stage of the research program.

Paper 1 explored patterns of mobile phone behaviour and revealed that mobile phones were perceived as being highly beneficial to young people’s lives, with the ability to remain in constant contact with others being particularly valued. The paper also identified that symptoms of behavioural addiction including withdrawal, cognitive and behavioural salience, and loss of control, emerged in participants’ descriptions of their mobile phone behaviour. Paper 2 explored how young people’s need to belong and their social identity (two constructs previously unexplored in the context of mobile phone behaviour) related to their mobile phone behaviour. It was revealed that young people use their mobile phones to facilitate social attachments. Additionally, friends and peers influenced young people’s mobile phone behaviour; for example, their choice of mobile phone carrier and their most frequent type of mobile phone use. These papers laid the foundation for the further investigation of addictive patterns of behaviour and
the role of social psychological factors on young people’s mobile behaviour throughout
the research program.

Stage 2 of the research program focussed on developing a new parsimonious
measure of mobile phone behaviour, the Mobile Phone Involvement Questionnaire
(MPIQ), which captured the cognitive and behavioural aspects of mobile phone use.
Additionally, the stage included a preliminary exploration of factors influencing young
people’s mobile phone behaviour. Participants ($N = 946$) completed a questionnaire
which included a pool of items assessing symptoms of behavioural addiction, the uses
and gratifications relating to mobile phone use, and self-identity and validation from
others in the context of mobile phone behaviour. Two papers (Papers 3 & 4) emanated
from the second stage of the research program.

Paper 3 provided an important link between the qualitative and quantitative
components of the research program. Qualitative data from Stage 1 indicated the reasons
young people use their mobile phones and identified addictive characteristics present in
young people’s mobile phone behaviour. Results of the quantitative study conducted in
Stage 2 of the research program revealed the uses and gratifications relating to young
people’s mobile phone behaviour and the effect of these gratifications on young
people’s frequency of mobile phone use and three indicators of addiction, withdrawal,
salience, and loss of control. Three major uses and gratifications: self (such as feeling
good or as a fashion item), social (such as contacting friends), and security (such as use
in an emergency) were found to underlie much of young people’s mobile phone
behaviour. Self and social gratifications predicted young people’s frequency of mobile
phone use and the three indicators of addiction but security gratifications did not. These
results provided an important foundation for the inclusion of more specific psychosocial predictors in the later stages of the research program.

Paper 4 reported the development of the mobile phone involvement questionnaire and a preliminary exploration of the effect of self-identity and validation from others on young people’s mobile phone behaviour. The MPIQ assessed a unitary construct and was a reliable measure amongst this cohort. Results found that self-identity influenced the frequency of young people’s use whereas self-identity and validation from others influenced their level of mobile phone involvement. These findings provided an important indication that, in addition to self factors, other people have a strong influence on young people’s involvement with their mobile phone and that mobile phone involvement is conceptually different to frequency of mobile phone use.

Stage 3 of the research program empirically examined the psychosocial predictors of young people’s mobile behaviour and one paper, Paper 5, emanated from this stage. Young people (N = 292) from throughout Australia completed an online survey assessing the role of self-identity, ingroup norm, the need to belong, and self-esteem on their frequency of mobile phone use and their mobile phone involvement. Self-identity was the only psychosocial predictor of young people’s frequency of mobile phone use. In contrast, self-identity, ingroup norm, and need to belong all influenced young people’s level of involvement with their mobile phone. Additionally, the effect of self-esteem on young people’s mobile phone involvement was mediated by their need to belong. These results indicate that young people who perceive their mobile phone to be an integral part of their self-identity, who perceive that mobile phone is common amongst friends and peers, and who have a strong need for attachment to others, in some
Mobile phone involvement cases driven by a desire to enhance their self-esteem, are most likely to become highly involved with their mobile phones.

Overall, this PhD program of research has provided an important contribution to our understanding of young Australians’ mobile phone behaviour. Results of the program have broadened our knowledge of factors influencing mobile phone behaviour beyond the approaches used in previous research. The use of various social psychological theories combined with a behavioural addiction framework provided a novel examination of young people’s mobile behaviour. In particular, the development of a new measure of mobile phone behaviour in the research program facilitated the differentiation of the psychosocial factors influencing frequency of young people’s mobile phone behaviour and their level of involvement with their mobile phone. Results of the research program indicate the important role that mobile phone behaviour plays in young people’s social development and also signals the characteristics of those people who may become highly involved with their mobile phone. Future research could build on this thesis by exploring whether mobile phones are affecting traditional social psychological processes and whether the results in this research program are generalisable to other cohorts and other communication technologies.
Submitted Manuscripts and Publications from the PhD research program

Paper 1

Paper 2

Paper 3

Paper 4
Paper 5


Notes

The publications listed above were produced during the candidate’s PhD program of research and relate only to the present research. The papers emanated from three distinct data collection points during the period 2005 to 2007.

Additional publications (listed below) citing the candidate as first author within the dissertation resulted either from the candidate’s earlier Honours research project or from an Australian Government funded grant awarded to the candidate (as chief investigator) and PhD supervisors White and Watson during the PhD research program:


As the following publications are separate to the current PhD research program, they are not discussed in full in the dissertation but are cited where appropriate and are listed in the reference list.

Honours Publications


Presentations during the PhD Research Program

*International Conferences*


*Australian Conferences*


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<td>ACA</td>
<td>Australian Communications Authority</td>
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<td>ACMA</td>
<td>Australian Communications and Media Authority</td>
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<td>AMTA</td>
<td>Australian Mobile Telecommunications Authority</td>
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<td>APA</td>
<td>American Psychiatric Association</td>
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<td>COS</td>
<td>Cell-phone Over-use Scale</td>
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<tr>
<td>DSM-IV TR</td>
<td>Diagnostic and Statistical Manual of Mental Disorders (4th edition, Text Revision)</td>
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<td>MMPUS</td>
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<td>QUT</td>
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<td>SD</td>
<td>Standard Deviation</td>
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<td>SMS</td>
<td>Short Messaging Service</td>
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Statement of Original Authorship

The work contained in this thesis has not previously been submitted for a degree or diploma at any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signed  _________________________  

Date  _________________________  

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CHAPTER 1: LITERATURE REVIEW

1.1 Mobile Phone Use in Australia

Since being introduced into Australia approximately 20 years ago, mobile phones have been widely adopted with a proliferation of uptake in recent years. For example, in 2000, there were approximately 10 million mobile phone subscriptions in Australia; in 2003, 14.3 million subscriptions; in 2006/2007, this number had risen to approximately 21 million (Access Economics, 2008). At present, approximately 81% of the total population of Australia owns a mobile phone (Australian Communications and Media Authority, [ACMA], 2008). However, of these mobile phone owners, approximately 35% have more than one phone (Mackay & Weidlich, 2007), resulting in the number of mobile phone subscriptions in Australia currently exceeding the population (Access Economics, 2008). The majority of Australians use their mobile phones mainly for personal purposes (71%); however, the number of people using mobile phones for business purposes is increasing (Mackay & Weidlich, 2007).

In addition to the number of mobile phone subscriptions in Australia increasing prolifically in recent years, the level of mobile phone use per person is also rising. For instance, the average amount of voice calling per user increased 28.4% from 2006/2007 to 2007/2008, with each user spending, on average, 2,569 minutes per year on voice calls (ACMA, 2008). Use of messaging services, in particular, has rapidly increased. In 2003/2004 approximately 5.1 billion text messages were sent in Australia (Allen Consulting Group, 2004). In 2006/2007, this number had more than doubled to 12.1 billion, with the number of messages sent in 2007/2008 increasing 62.3% to over 19.7 billion (ACMA, 2008). It is also acknowledged, however, that the level of mobile phone
use varies widely, with some mobile phone users engaging in negligible use whereas others engage in very high levels of use (Mackay & Weidlich, 2007).

There are a number of reasons for the popularity and high uptake of what is primarily a communication technology. Practical reasons, such as falling call costs (Allen Consulting Group, 2004) and improved coverage (Access Economics, 2008), have enabled access for many people. Additionally, the multiple functions available on mobile phones, for instance sending and receiving photos and video clips, accessing email and the internet, and playing games, also increases potential for use (Access Economics, 2008; ACMA, 2007). The amount of non-communication use is growing with more content (e.g., music, ring-tones, games) being purchased each year (Mackay & Weidlich, 2007). This suggests that mobile phones are being used for reasons other than communication purposes. Interestingly, a recent trend emerging is that some mobile phone owners only purchase mobile phone content and rarely, or never, use their phone for communication (Mackay & Weidlich, 2007). Finally, the portability of mobile phones makes mobile phone use a convenient method for remaining in contact with others (ACMA, 2007). The short messaging service (SMS) is most valued for providing a quick and convenient method of contacting others with 89% of SMS communication being between close friends (89%), followed by wider friendship networks (84%), and family members (81%) (Mackay & Weidlich, 2007).

In addition to practical factors influencing mobile phone use, there are a number of perceived psychological benefits arising from use. For example, enhanced social inclusion as mobile phone use facilitates the formation and maintenance of social networks (Ling, 2004; Srivastava, 2005); feelings of safety and security, particularly for
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young women driving or walking alone at night, as emergency services can quickly be contacted (Carroll, Howard, Peck, & Murphy, 2002); and a sense of freedom for adolescents who are able to engage in activities whilst remaining contactable by parents (Ling, 1999; Mathews, 2004). Additionally, many Australian workers report that they would be unable to work productively without their mobile phone (Wacjman, Bittman, Jones, Johnstone, & Brown, 2008). The practical and psychological benefits arising from mobile phone use have contributed to the highly prevalent use of the technology throughout Australia.

Although mobile phone ownership and use is spread across all demographic sections of Australian society, older adolescents and young adults aged under 25 years are the most likely age group to own a mobile phone (Mackay & Weidlich, 2007) and are also recognised as the highest users of the technology (ACMA, 2008a; Oh et al., 2008). This cohort is the first generation to have grown up with mobile phones and, as such, have incorporated mobile phone use into their lives with the technology being the primary telecommunications source in this group (ACMA, 2007). Although there are no specific data collected on the frequency of young Australian’s mobile phone use, there are indications that the level of use varies widely. One Australian study concluded that, on average, Australian adolescents use their mobile phone at relatively low levels (97% of participants reported making fewer than five calls per day and 85% reported using SMS fewer than five times per day; Mathews, 2004). In contrast, other researchers have found that some young adults engage in relatively high levels of mobile phone use (Bianchi & Phillips, 2005), some more than 25 times a day (Walsh & White, 2006). Young people are noted to be more likely than older people to use mobile phones for
activities apart from communication (such as downloading music, purchasing ringtones, camera) (Mackay & Weidlich, 2007), suggesting that young people’s involvement with their mobile phones is extending beyond using the phone as a communication device. It may be for these reasons that problematic and inappropriate mobile phone use is becoming more commonly reported.

1.1.1 Problematic Mobile Phone Use

As mentioned in the previous section, mobile phone use is a common behaviour with many practical and psychological benefits being noted. However, inappropriate and problematic use is also becoming acknowledged (e.g., Bianchi & Phillips, 2005; Walsh & White, 2006). A recent Australian survey found that 96% of respondents reported being extremely annoyed with mobile phones being used at inappropriate times such as in cinemas (ACNeilsen, 2004). Additionally, 75% of respondents reported being annoyed with mobile phone users’ lack of good manners when using their mobile phone. Many people consider that mobile phones are disruptive to public environments and that more regulations limiting where phones can be used should be introduced (ACNeilsen, 2004). However, a number of young Australians believe it is acceptable to use their mobile phones when they are with other people and in environments where they are requested not to use them (e.g., cinemas, lectures) (Walsh & White, 2006).

Although many schools have banned the behaviour, mobile phone use in classrooms and other educational environments disrupts teaching, interrupts other students, and draws the attention of the user away from the class, potentially leading to poorer educational outcomes (Hiscock, 2004; Sanchez-Martinez & Otero, 2008; Selwyn, 2003). Although organisations such as the Australian Mobile Telecommunications
Authority (AMTA) have produced guidelines to assist teachers to facilitate responsible use in schools (AMTA, 2003), inappropriate mobile phone use remains prevalent in many educational settings (Sanchez-Martinez & Otero, 2008) and the wider social context (Netsafe, 2005).

Another relatively common behaviour, mobile phone use while driving, presents a significant safety risk to Australian drivers (McEvoy et al., 2005). Drivers who use a mobile phone (either hand-held or hands-free) while driving have a significantly higher crash risk (Haigney, Taylor, & Westerman, 2000; McEvoy, Stevenson, & Woodward, 2006) and are more likely to be involved in a fatal crash (Mrad, Kelsh, Cher, & Maclure, 1999) than drivers who do not use a mobile phone. Although hand-held mobile phone use while driving is illegal in Australia, observational studies indicate that two percent of Australian drivers are using a hand-held mobile phone at any one time (Glendon & Sutton, 2005; McEvoy et al., 2005) whereas self-report studies vary with between 30% (Telstra, 2004) and 73% (Thompson, 2005) of drivers reporting they use a hand-held phone while driving at some time. In general, drivers appear to consider that the perceived benefits of using a mobile phone while driving (for example, effective use of time and receiving important information; Walsh, White, Hyde, & Watson, 2008b) outweigh any potential safety risks (Walsh, White, Hyde, & Watson, 2008a).

Young drivers, in particular, ignore bans on hand-held mobile phone use while driving and are more likely than older drivers to use a mobile phone for both calls and text messages while driving (Pennay, 2006; D. M. Taylor, Bennett, Carter, Garewal, & Barnstone, 2003; Walsh, White, Watson, & Hyde, 2007). Although they are generally aware of the safety risks of using a mobile phone while driving (Walsh, White, Watson
et al., 2007), young drivers report that the risk of being perceived as uncivil if they do not use their phone to communicate with their friends while driving is a more important concern than the risk of having a crash (Martha & Griffet, 2007). As young drivers prioritise mobile phone use over driving, they face an increased crash risk and the potential of financial and legal difficulties if detected and fined.

Many young Australians already experience financial difficulties as a result of their mobile phone use (Griffiths & Renwick, 2003). Seventy-eight percent of the debt incurred by young Australians aged between 18 and 24 years is due to mobile phone costs. In some cases, this debt leads to bankruptcy which results in ongoing legal and financial complications (Australian Communications Authority [ACA], 2004a). Although the introduction of fixed price and pre-paid plans has reduced the potential for excessive debt arising from mobile use, some young mobile phone users regularly exceed the amount of use allowed for in these plans and, subsequently, pay more for additional use (ACA, 2004b). In addition to mobile phone debt contributing to the development of financial problems and ongoing monetary mismanagement, there is evidence of illegal behaviour with some New Zealand adolescents reporting that they have stolen money to pay their mobile phone bill (Netsafe, 2005).

Finally, it is argued that mobile phone use is related to unhealthy lifestyles and health problems amongst youth. For instance, some young mobile phone users leave their phone on at night which disrupts their sleep patterns and results in high levels of waking-time tiredness (Punamake, Wallenius, Nygard, Saarna, & Rimpela, 2007). A link between mobile phone use and smoking uptake has also been hypothesised as young people seek to engage in behaviours which are popular among their friends and
peers (Cassidy, 2006). Although controversial and requiring more research, there is also
discussion in the literature about whether mobile phone use is related to the
development of brain tumours (Bondy et al., 2008). Additionally, recent literature has
begun discussing the potential emergence of mobile phone addiction (see Section 1.4.1).
The presence of these concerning patterns of mobile phone behaviour suggests that there
is a need to investigate the factors influencing young people’s mobile phone behaviour
so that the characteristics of those people who may develop problematic mobile phone
behaviours are understood. Research into people’s use of other modern technologies, in
particular the internet, provides a foundation upon which to develop our understanding
of mobile phone behaviour.

1.2 Drawing on Related Communication Technology Research to Understand Mobile
Phone Behaviour

In terms of technology adoption and use, the most closely related modern
technology to mobile phones is the internet, given the internet’s ability to facilitate
communication between people via email and chat rooms. Similar to mobile phones, the
internet was quickly adopted by general society and has become an integral part of many
people’s lives, especially younger people. In Australia, most people spend between half
an hour to an hour online with email being the most commonly performed activity
(ACMA, 2008b). Similar to mobile phones, it is younger people who use the internet
most frequently and who report that the technology is highly beneficial to their daily
lives (ACMA, 2008b). However, as with mobile phone use, problematic patterns of
internet use, such as excessive online gambling (Shaffer, 1996; Shaffer & Kidman,
2003) and game playing (Griffiths & Hunt, 1998; C. S. Peters & Malesky, 2008), are
reported. Additionally, addictive patterns of internet use are discussed in the literature (see for example, Griffiths, 1999; Whang, Lee, & Chang, 2003; Yellowlees & Marks, 2005; Young, 1998). Given these commonalities with mobile phone use, much previous mobile phone research was based on the findings of internet research, and, thus, warrants discussion in this thesis. It is also noted that many modern mobile phones are internet enabled, thereby increasing the links between the two technologies. However, in Australia use of mobile phones for internet based activities is currently very small (Mackay & Weidlich, 2007; Oh et al., 2008). Therefore, the focus of this section is on the communication-based aspects of internet behaviour.

The high use of the internet for emailing and the prolific use of social networking sites (such as MySpace) and instant messaging services (e.g., MSN [MicroSoft Network Messenger]) by young people (Lenhart, Madden, Rankin Macgill, & Smith, 2007; Spin Sweeney, 2004) signifies the important role these online activities play in facilitating and maintaining social relationships between people (Cheuk & Chan, 2007; Lenhart et al., 2007). Use of these services can maintain psychological well-being because young people have reported feeling connected to their friends and peers even when they are apart (Valkenburg & Peter, 2007; Valkenburg, Peter, & Schouten, 2006). Additionally, some non-communication internet activities, such as online game playing, create a psychological sense of community which enhances social inclusion and provides a source of social support (Longman, O’Connor, & Obst, 2009). Overall, the internet is perceived by many young people as being a highly valuable tool for enhancing their social connection.
In addition to revealing the benefits arising from internet use, internet research also informs our understanding of which types of people appear more likely to use communication technologies. Extraverts particularly value the social functions of the internet whereas introverts like using the technology as it minimises their actual contact with others (Kraut et al., 2002). Additionally, people with traits of disagreeableness, neuroticism, introversion, and low conscientiousness have been found more likely to develop problematic patterns of internet gaming (C. S. Peters & Malesky, 2008) which is perceived as providing a connection to others (Longman et al., 2009). These results suggest that some peoples’ need to relate to others, albeit via a technology, is leading to concerning patterns of behaviour.

Identification factors have also been related to people’s internet use. For instance, Amichai-Hamburger (2007) posits that the internet allows for the merging of both self and social identities, in that people are able to be a part of a group whilst remaining separate. The ability to represent oneself on the internet by creating personal profiles has led to the internet becoming an important part of many people’s self-concept with the result that they are more likely to continue using the technology (Gross, 2004). Additionally, social identity aspects also play a role. For instance, the amount of time that many people spend using the internet is related to how often friends are using the technology (C. S. Peters & Malesky, 2008; Valkenburg et al., 2006; Wolak, Mitchell, & Finkenhor, 2003). Thus, the findings of internet research indicate that it is important to consider psychosocial variables when researching people’s use of communication technologies, such as the internet and mobile phones (McKenna & Seidman, 2006; Stern, 1999). This research program adopts a social psychological
approach to understanding a behaviour which has many similar characteristics to the internet. It is noted, however, that a major difference between the two technologies is that, in general, internet use is restricted to home or office environments (ACMA, 2008b). Thus, it is possible that social psychological variables will be strongly related to mobile phone behaviour as mobile phones are used in many social contexts.

1.3 Previous Perspectives in Mobile Phone Research

1.3.1 Sociological Research

Although there is a growing body of research investigating the psychology of mobile phone use in Australia and internationally, the majority of previous mobile phone research has been conducted overseas, adopts a communication theory or sociological framework, and, until recently, emphasised the positive aspects of mobile phone use (e.g., Leung & Wei, 2000; Ozcan & Kocak, 2003; Srivastava, 2005; Wei & Lo, 2006). In general, sociological studies investigate the social implications of mobile phone technology by identifying symbolic meanings surrounding use and the impact of mobile phones on the wider society (e.g., Geser, 2004; Ling, 2000; Plant, n.d.; A. S. Taylor & Harper, 2003). For instance, Ling (2000) and Taylor and Harper (2003) found that many adolescents viewed mobile phone ownership and use as symbolic of their growing independence from their parents as they were able to contact friends and engage in activities without their parents’ knowledge. In contrast, many parents believe the mobile phone acts as a security device by facilitating contact between children and parents if there was an emergency (ACMA, 2007). Many youth see the mobile phone as a fashion item and personalise their phone with unique ringtones and screensavers as a form of identity expression, reflecting the role that mobile phones play in symbolising
users’ self-identity (Katz & Sugiyama, 2005). Mobile phones are also symbolic of group membership with many young people decorating their phone in a similar manner to friends and peers and storing photos of friends and messages from valued people on their phone to ensure that people who are important to them are constantly present in their psyche (Katz & Sugiyama, 2005; Srivastava, 2005). Young people report that they display their phone in public to signal to others in the vicinity that they are members of a wider community (Plant, n.d.). Additionally, using a technologically advanced phone can become a method to gain status amongst friends and facilitate membership of a select group of peers (Ozcan & Kocak, 2003).

Young people, in particular, perceive that mobile phones are integral to their social networking as having a mobile phone allows them to be readily contactable by their friends and peers aiding in the formation and maintenance of social groups (Campbell & Russo, 2003; Carroll et al., 2002). Mobile phone use has led to the development of new social behaviours such as keeping the phone readily available, adopting strategies to hide mobile phone use, for example covering the mobile phone with a hand in places where use would not be socially sanctioned, and showing messages to friends to collectively share communication and information (Plant, n.d.). The portability of the mobile phone and the ability to be contacted, irrespective of time and location, has enabled the creation of wider social networks which are not constrained by geographical boundaries. Thus, the number and type of influences on young people’s development is expanding (Carroll et al., 2002; Geser, 2004; Srivastava, 2005). For these reasons, the mobile phone represents status amongst peers, connectedness to others, and freedom from constraints for many young people.
Traditionally, genders have differed in their adoption and use of new technologies; however, sociological and other studies reveal that this trend is not apparent in mobile phone use (Geser, 2004). Although men have previously been found to hold more favourable attitudes towards new technologies and adopt new technologies earlier than women (Venkatesh, Morris, & Ackerman, 2000), both genders have adopted the mobile phone enthusiastically with approximately equal numbers of males and females in Australia owning and using mobile phones (Mackay & Weidlich, 2007). Thus, mobile phones appear to have bridged the technological gender divide (Lemish & Cohen, 2005; Srivastava, 2005) in Australia and overseas. However, there is conflicting evidence regarding mobile phone use across the genders. Some authors report that females use their phone to contact friends and family members more often than males whereas males contact a wider range of people and use the phone more for business purposes than females (Igarashi, Takai, & Yoshida, 2005; Lemish & Cohen, 2005). Other authors have noted no gender difference in the reasons for use, concluding that mobile phone use is enabling societal changes by broadening traditional gender roles to encompass new forms of communication styles (Geser, 2004; Srivastava, 2005).

1.3.2 Communication Research

Communication theorists (e.g., Leung & Wei, 2000; Ozcan & Kocak, 2003; O. Peters & ben Allouch, 2005; Wei, 2008) have investigated the motivations underlying some people’s mobile phone use. By applying uses and gratifications theory (Ruggiero, 2000; see Section 2.3.4 for a more in-depth review) to understand people’s frequency of mobile phone use, these studies have generally identified three common gratifications fulfilled by mobile phone use. First, the mobile phone is used for functional or
instrumental purposes with users reporting that the mobile phone is a beneficial tool for organizing their lives. Additionally, having a mobile phone negates the need to locate public phones and makes arranging business activities easier as people are constantly available to work colleagues and clients. Second, social purposes are highly valued by many users. The mobile phone enables contact between family and friends to be maintained and assists in the formation of new social relationships. Finally, mobile phones are used to fulfil self-gratifications as they provide a form of entertainment, can reflect an individual’s self-identity, and are sometimes used to obtain status amongst peers (Leung & Wei, 2000; Ozcan & Kocak, 2003; O. Peters, Almekinders, van Buren, Snippers, & Wessels, 2003; Wei, 2008). These benefits have contributed to the rapid rise in mobile phone use, particularly amongst youth, with many users engaging in highly frequent use to fulfil these gratifications (O. Peters et al., 2003; Wei, 2008).

Despite measurement of factors influencing the frequency of people’s mobile phone use providing important information about the reasons underlying use, level of use measures may be unreliable. When A. A. Cohen and Lemish (2003) compared participants’ self-reported data of the amount of time they spent using their mobile phone and the number of times a day they used their mobile phone with their actual calling records, the associations between the self-report data and the calling records were relatively small. Participants either over- or under-estimated their actual mobile phone use. However, participants recall was more accurate for the number of times per day they used their mobile phone than for the amount of time spent using their phone (A. A. Cohen & Lemish, 2003). Additionally, asking specific questions about behaviours to create a composite measure can also improve reliability of self-report
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instruments (Kazdin, 2003). Thus, to assess participants’ frequency of mobile phone use in this research program, the approach used will be to measure the number of times per day participants use their mobile phone for specific calling and text messaging behaviours to create an overall measure of frequency of mobile phone use. Given the inherent difficulties in obtaining participants’ use records and the lack of availability of their account records, it is believed that this approach will provide the best available proxy measure of participants’ frequency of mobile phone use.

In addition to using their phone for calling and text messaging, many mobile phone users report that, although they may not be using it, they have their phone available at all times (Mackay & Weidlich, 2007) and regularly check for missed calls or messages (Srivastava, 2005), behaviours which may not be adequately captured in most measures assessing frequency of mobile phone use. Given the emergence of problematic mobile phone behaviours (see Section 1.1.2) and the potential difficulties in relying on level of use measures alone, some recent research has begun developing new measures to improve our understanding of people’s mobile phone behaviour.

1.4 Recent Psychological Approaches to Understanding Mobile Phone Behaviour

1.4.1 The Addiction Perspective

In addition to the emergence of problematic mobile phone behaviour, there have been indications in the literature of young people becoming over-involved with their mobile phones. For instance, in the recent ACMA (2007) report, many young Australians reported that they were heavily dependent on their phone and could not imagine being without it. Additionally, addictive patterns of behaviour have been revealed with some young users reporting that they cannot turn their phone off and that
they experience anxiety and discomfort when they are unable to use their phone (Srivastava, 2005; Wilska, 2003). Finally, James and Drennan (2005) argue that some young Australians have developed a compulsive pattern of behaviour similar to a behavioural addiction. Given the emergence of these behaviours, a recent trend in some mobile phone research has been to base new measures assessing people’s mobile phone behaviour on addiction criteria.

Historically, addictions were described as habits or pursuits which consumed an individual’s life (Alexander & Schweighofer, 1988). However, in the 19th century, a medical view of addiction was adopted with the term being narrowed to describe substance-related disorders and compulsive behaviours which resulted in significant harm to the individual. Thus, addictions are viewed as negative pathological states manifested by a compulsive pattern of behaviour which results in significant harm to the individual (D. E. Smith & Seymour, 2004). Although most commonly used to describe substance-related disorders, the term addiction has been applied to describe a wide range of excessive behaviours including eating (Davis & Claridge, 1998), exercise (Veale, 1987), internet use (Griffiths, 1999; Yang & Tung, 2007; Young, 1998), joyriding (Kellett & Gross, 2006), sex (Goodman, 1997), shopping (Dittmar, 2005), and suntanning (Poorsattar & Hornung, 2006). Within the literature, however, there is argument concerning the labelling of many activities as addictions.

An example of this debate can be found in the technological addiction literature. Technological addictions, defined as non-substance addictions involving excessive human-machine interactions, are posited to be a subset of behavioural addictions (Griffiths, 1999; Shaffer, 1996). However, there is much debate surrounding the
classification and diagnosis of technological addictions, in particular internet addiction (Fitzpatrick, 2008; Mossbarger, 2008). Some authors argue that internet use causes severe disruption to many users’ lives with internet preoccupation being evident in thoughts and behaviour to the extent that family and work relationships are damaged, physical health deteriorates, and financial consequences are incurred (Chou & Hsiao, 2000; Nichols & Nicki, 2004; Young, 1998). Other authors, however, argue that the side-effects of internet use do not impact widely enough on people’s lives to warrant being classified as an addiction and should be regarded as an excessive or compulsive pattern of behaviour (Blaszczynski, 2006; Widyanto & Griffiths, 2006; Yellowlees & Marks, 2005). Additionally, many authors warn that caution is required when considering whether behaviours warrant labelling as an addiction due to the negative connotation and disease-based approach which results when the term is applied (see for example, Chassin, Presson, Rose, & Sherman, 2007; Lemon, 2002; Orford, 2001; D. E. Smith & Seymour, 2004).

An alternative approach to viewing all addictions as pathological is proposed by Orford (2001) who argues that a distinction exists between addiction and excessive behaviour. Specifically, Orford posits that some people develop a psychological over-attachment to an object or behaviour which results in them behaving in a manner similar to an addictive pattern of behaviour without experiencing the severe consequences of a pathological addiction. Support for Orford’s distinction between excessive attachment to a behaviour and addiction has been found amongst computer users and online game players (J. P. Charlton, 2002; J. P. Charlton & Danforth, 2004, 2007). These authors found that some computer users and online game players were so highly engaged with
the behaviour that they reported symptoms of addiction without experiencing the severe negative consequences required for diagnosis of a pathological condition (J. P. Charlton & Danforth, 2004, 2007). Additionally, Glasser (1985) and Orford (2001) argue that some excessive behaviour, such as exercise, where people may behave in a manner similar to an addiction may be positive as the behaviour provides benefits to the person.

Irrespective of the terminology used, the literature consistently argues that addictive patterns of behaviour develop when behavioural performance becomes associated with a desired mood change (see, for example, Brown, 1997; Dittmar, 2004b; Loonis, Apter, & Sztulman, 2000; Orford, 2001). This positive outcome reinforces continued behaviour leading to the development of an addiction (Brown, 1993; Lemon, 2002). Similar to substance addictions in which expectancies are highly related to continued use (Brandon, Herzog, Irvin, & Gwaltney, 2004; Gaffney, Thorpe, Young, Collett, & Occhipinti, 1998), excessive or addictive technological use is related to an expected reduction in negative states, such as loneliness, and expected benefits from use, such as social inclusion (Griffiths, 1999). Likewise, associating material goods with producing positive mood change leads to the development of addictive patterns of behaviour (Dittmar, 2004b).

Addictive patterns of behaviour are characterised by a number of symptoms including withdrawal, euphoria, conflict with other people and daily activities, cognitive and behavioural salience, and relapse and re-instatement (Brown, 1993, 1997; Goodman, 1990; Orford, 2001). Central to the diagnosis of addiction, however, is the continued performance of behaviour in spite of debilitating consequences being experienced by the person and severe disruption their environment and lifestyle (Brown,
It is these negative consequences which differentiate addictions from excessive, habitual, or compulsive patterns of behaviour (Shaffer, Hall, & Vander Bilt, 2000). Although negative consequences such as debt (ACA, 2004a; Griffiths & Renwick, 2003) and disrupted sleep patterns (Jenaro, Flores, Gomez-Vela, Gonzalez-Gil, & Caballo, 2007; Leena, Tomi, & Arja, 2005) have been reported as a consequence of young people’s mobile phone use, it is not yet evident that these negative outcomes are sufficiently debilitating to warrant the behaviour being classified as pathological. However, these findings suggest that inclusion of addiction symptoms in measures of mobile phone behaviour can improve our understanding of people’s involvement with their mobile phones. There have been a few recent studies adopting this approach as discussed below.

1.4.1.1 Recent Measures of Mobile Phone Behaviour

As mentioned previously, a recent trend in the mobile phone research literature has been the inclusion of addiction symptoms in measures assessing people’s mobile phone behaviour. One recent Australian study utilising this approach was conducted by Bianchi and Phillips (2005) who developed a measure of problematic mobile phone use, the Mobile Phone Problem Use Scale (MPPUS). Problematic mobile phone use was defined as continued mobile phone use in spite of negative outcomes and societal restrictions. The MMPUS, a 27-item measure, included items assessing widely accepted addiction criteria such as tolerance, withdrawal, and euphoria, as well as constructs such as social influences (for example, friends’ mobile phone use). The MMPUS was reported to be a valid and reliable measure with the results of Bianchi and Phillips’ study providing an indication of emerging patterns of mobile phone behaviour.
Participants in Bianchi and Phillips’ (2005) study ranged from 18 to 85 years and it was younger people who were most likely to engage in problematic mobile phone use. The study variables (discussed in more detail in the next section) explained less variance in people’s amount of mobile phone use (8.7%) than in problematic use (40%) and different personality factors were associated with problematic use and amount of mobile phone use (see Section 1.4.3 for more discussion). In a similar study, Ehrenberg, Juckes, White, and Walsh (2008) found that personality predictors explained more variance in a measure of addictive tendencies for mobile phone use, comprising three indicators of addiction, than in the amount of time participants spent using their mobile phone for calling or text messaging each day. Taken together, the results of Bianchi and Phillips and Ehrenberg et al. suggest that general mobile phone use differs from a pattern of behaviour in which symptoms of addiction are present.

Similar to Bianchi and Phillips (2005), Jenaro et al. (2007) incorporated symptoms of addiction into a measure of mobile phone behaviour. These authors created a 23-item cell-phone (mobile) over-use scale (COS) by adapting the wording of DSM-IV TR pathological gambling criteria (American Psychiatric Association [APA], 2000) to mobile phone use. Predictors in the study included anxiety, depression, general health, and other pathological behaviours (substance abuse and dependency, and pathological gambling). Participants in Jenaro et al.’s study were divided on the basis of their amount of mobile phone use (light versus heavy) as well as on their COS scores (pathological over-users and non-pathological over-users). Interestingly, it was found that a large proportion of those participants classified as non-pathological cell-phone (mobile) users were heavy users supporting the distinction between frequency of mobile
phone use and an addictive pattern of behaviour. No analyses were performed on the predictors of pathological cell-phone over-use in the study due to a lack of participants in this category leading to authors to conclude that their measurement approach may not have been appropriate (Jenaro et al., 2007).

Although Jenaro et al. (2007) classified mobile phone over-use as a pathological behaviour, this categorisation may be premature. As stated previously (Section 1.3.1) pathological behaviours, such as addiction, require the presence of significant harms to the self and others (Lemon, 2002; Orford, 2001). Although it is acknowledged that negative outcomes (such as debt) can result from mobile phone use, it is not yet evident that these consequences are sufficiently debilitating to meet the criteria for an addiction. For this reason, this thesis posits that Orford’s (2001) approach of viewing behavioural addictions as a psychologically based over-attachment to, or involvement in, an activity or behaviour is appropriate to understanding people’s mobile phone behaviour. The thesis uses the term mobile phone involvement to represent the cognitive and behavioural aspects of a pattern of mobile phone behaviour which is similar in characteristic to a behavioural addiction but without the pathologising consequences of an addiction.

1.4.2  The Individual Difference Approach

The individual difference approach to understanding mobile phone behaviour in Australia has been primarily investigated by Phillips and colleagues (Bianchi & Phillips, 2005; Butt & Phillips, 2008; Phillips, Butt, & Blaszczynski, 2006). Building on the findings of previous internet based research, these authors have adopted a personality perspective to improve our understanding of psychological factors underlying general
mobile phone involvement (Butt & Phillips, 2008), problematic mobile phone use (Bianchi & Phillips, 2005), and use of mobile phones to play games (Phillips et al., 2006). Additionally, Ehrenberg et al. (2008) adopted this approach to explore addictive tendencies for mobile phone behaviour among Australian university students. In contrast to the social psychological perspective adopted in this thesis, the individual difference approach focuses on those dispositional or internal factors which drive behaviour. The major focus of the previous research in this area has been to identify the effect of personality factors and self-esteem on mobile phone behaviour (discussed more fully in Section 2.3.3). In particular, these studies have used the five-factor model of personality (Costa & McCrae, 1992) to explore the psychological profiles of mobile phone users.

The five factor model of personality (Costa & McCrae, 1992; McCrae & Costa, 1984) posits that people have a relatively stable disposition with personality being derived from a person’s level of conscientiousness (controlling goals and impulses when completing tasks), neuroticism (general emotional stability and adjustment), openness to experience (willingness to undertake new experiences), agreeableness (co-operation with others and social harmony), and extraversion (quality of interpersonal interactions and level of engagement with the external world). These traits are believed to underpin our interactions with other people and much of our behaviour.

The most consistent personality predictors of mobile phone behaviour have been agreeableness (Butt & Phillips, 2008; Ehrenberg et al., 2008; Phillips et al., 2006) and extraversion (Bianchi & Phillips, 2005; Butt & Phillips, 2008; Ehrenberg et al., 2008; Phillips et al., 2006). Interestingly, people who are low in agreeableness use their mobile phones for calling (Butt & Phillips, 2008; Ehrenberg et al., 2008; Phillips et al., 2006),
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text messaging (Butt & Phillips, 2008), and games (Phillips et al., 2006) more often than people who are high in agreeableness. These findings suggest that mobile phone use may assist people who find face to face interactions difficult to remain in contact with their family, friends, and peers (Reid & Reid, 2007). Overall, extraversion has been found to be the most constant personality predictor of mobile phone behaviour across previous studies. People who are high in extraversion are more likely to spend more time using their phone for general purposes (Bianchi & Phillips, 2005), calls (Butt & Phillips, 2008; Phillips et al., 2006), and text messaging (Butt & Phillips, 2008; Ehrenberg et al., 2008), to engage in problematic mobile phone use (Bianchi & Phillips, 2005), and to demonstrate addictive tendencies for mobile phone use (Ehrenberg et al., 2008), than people who are low in extraversion. Extraverts also call a wider range of people more regularly than introverts (Bianchi & Phillips, 2005) reinforcing the social nature of mobile phone use.

The individual difference approach adopted in previous research has provided valuable information about psychological factors influencing mobile phone behaviour. In particular, the consistency of extraversion as a predictor of mobile phone behaviour provides an important indication that social relationships may influence young people’s mobile phone behaviour. Additionally, social factors are acknowledged as affecting both personality and behaviour (Pettigrew, 1997), reinforcing the potential role for psychosocial influences in young people’s mobile phone behaviour. In addition to the findings of the individual difference approach suggesting that other people may affect a person’s mobile phone behaviour, research assessing the association between clinical
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factors and mobile phone use also provides an indication of the psychological
underpinnings of mobile phone behaviour.

1.4.3 The Psychopathological Approach

Due to the relatively new nature of mobile phone research, there has been little
investigation of the relationship between psychopathology and mobile phone behaviour. However, the studies which have adopted this approach, in general, have found that
psychopathological factors are not highly related to mobile phone behaviour. The two
psychopathologies most commonly explored in relation to mobile phone behaviour are
depression and anxiety.

Depression ranges from a depressed mood to a clinical diagnosis of a major
depressive episode with suicidal tendencies (APA, 2000). People who are experiencing
a depressive episode demonstrate a range of cognitive, behavioural, and somatic
symptoms including reduced emotional responses diminishing enjoyment of life,
feelings of inadequacy leading to withdrawal from others, and loss of energy leading to
reduced performance of much behaviour (Beck, 1967). Although the link between
depression and mobile phone behaviour has not been clearly articulated in the studies
that have included depression as a predictor of mobile phone behaviour (Ha, Chin, Park,
Ryu, & Yu, 2008; Jenaro et al., 2007; Sanchez-Martinez & Otero, 2008), it may be that,
similar to the internet, mobile phones provide an easy method for depressed people to
keep in contact with others when direct contact may be too difficult (Ybarra, Alexander,
& Mitchell, 2005). The results of studies assessing the effect of depression on mobile
phone use have been mixed. Although some authors report that people with depression
have the potential to engage in excessive (Ha et al., 2008) and intensive mobile phone
use (Sanchez-Martinez & Otero, 2008), Jenaro et al. (2007) found no effect of depression on heavy mobile phone use. It is noteworthy, however, that Sanchez-Martinez et al. (2008) categorised intensive mobile phone use as being greater than four times a day, a figure which arguably is within the average, rather than intensive, range and, thus, their finding should be interpreted with caution.

Similarly, studies investigating the relationship between anxiety constructs and mobile phone behaviour have provided mixed results. For instance, high interpersonal anxiety has been related to excessive mobile phone use (Ha et al., 2008) and people diagnosed with clinical anxiety appear more likely to engage in heavy mobile phone use than non-clinically anxious people (Jenaro et al., 2007). In contrast, Reid and Reid (2007) found no effect of social anxiety on the amount that people used their mobile phone for calling others. Interestingly however, socially anxious people preferred to use their mobile phone for text messaging rather than calling whereas non-socially anxious people preferred calling to text messaging (Reid & Reid, 2007). These results suggest that mobile phones may assist socially anxious people to contact others by providing a less threatening method of communication than direct approaches (Reid & Reid, 2007). Additionally, when including the uses and gratifications of mobile phone behaviour (including self and social factors) with anxiety in a model to predict amount of mobile phone use, it was found that self gratifications (e.g., as a fashion item, to reflect personality) and social gratifications (e.g., to meet new people, stay in touch) negated any effect of anxiety on mobile phone use. This result reveals the important role that self and social factors play in determining mobile phone behaviour (Reid & Reid, 2007).
It has been suggested that psychopathological factors may be poor predictors of mobile phone behaviour due to the commonality of the activity and the lack of overall pathology associated with mobile phone use (Jenaro et al., 2007). However, the results of the studies investigating mobile phone behaviour from this perspective highlight the need for broader research in the area (Sanchez-Martinez & Otero, 2008). Overall, the results of these studies reflect the importance of interpersonal relationships on mobile phone behaviour (Ha et al., 2008; Reid & Reid, 2007; Sanchez-Martinez & Otero, 2008) and the way mobile phones assist the social development of young people (Sanchez-Martinez & Otero, 2008). The present program of research builds on these themes by adopting a social psychological approach to explore young people’s mobile phone behaviour.

1.5 The Present Program of Research

The present program of research adopts a social psychological approach to investigate factors relating to young Australian’s mobile phone behaviour. Current youth are the first cohort to have grown up with mobile technology and are developing some concerning patterns of mobile phone behaviour. Additionally, the previous research reviewed in this chapter indicates that a social psychological perspective will add to our understanding of the psychological underpinnings of this increasingly prevalent communication behaviour. Thus, the scope of the research program is limited to focussing on psychosocial factors influencing young people’s mobile phone behaviour.
1.5.1 Scope of Research Program

1.5.1.1 A Youth Cohort

The present program of research specifically explores mobile phone behaviour amongst Australian youth aged between 15 and 24 years\(^1\). As discussed previously, younger people, in general, use their mobile phones more than any other age group and are more likely than older people to engage in concerning mobile phone behaviour. Additionally, there are a number of social developmental factors which make this cohort a unique population among which to undertake research. Young people in their late teens and early twenties are transitioning through a specific life stage in which their personal and social development is rapidly evolving (Arnett, 2004). More transitional events (e.g., leaving school, commencing work, moving out of home) which require the formation of new relationships and the development of coping skills occur during this period than at any other stage in life. Parental restrictions gradually weaken as youth become more independent and social influences are extended beyond the relatively narrow confines of family and school (Arnett, 2004). Youth are exploring the world around them and discovering attitudes and behaviours which will shape their self-identity and continue through adulthood (Tanner, 2006). This group is more likely than any other age group to be highly influenced by their friends and to engage in peer approved behaviours (Smetana, Campione-Barr, & Metzger, 2006) as group membership and approval is strongly related to their overall sense of well-being (Laible, Carlo, & Roesch, 2004). For these reasons, it is believed that young Australians are a unique and appropriate cohort amongst which to investigate patterns of mobile phone

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\(^1\) The Australian Clearinghouse for Youth Studies defines youth as people aged 15 to 24 years of age (Australian Clearinghouse for Youth Studies, 2006)
behaviour. In limiting the scope of the project, however, there are a number potential research directions relating to mobile phone use that are not explored.

As the research program specifically targets Australian youth aged between 15 and 24 years, it does not explore mobile phone use amongst the wider population. It is acknowledged that mobile phones are used by all demographic groups; however, adolescents and young adults in general, use their phone in a different manner to older users (ACMA, 2008a). Younger users are more likely to use their mobile phone as a regular part of their daily lifestyle whereas many older users limit their mobile phone use to emergency or work-related situations (ACMA, 2007; Walsh, White, Watson et al., 2007). Although it would be informative to compare mobile phone behaviour between different demographic groups, such research is beyond the scope of this research program. Due to the lack of mobile phone research specifically utilising a youth population, references to mobile phone use amongst the general population are included where relevant.

1.5.1.2 A Social Psychological Perspective

The research program is also limited to investigating mobile phone behaviour from a social psychological perspective. Although findings from relevant sociological, communication, and technological research broadly inform the studies, a specific examination of mobile phone behavior from each of these perspectives is beyond the scope of this research program. It is also acknowledged that a psychopathological or individual difference approach may be appropriate when investigating behaviours which are similar in characteristic to an addictive pattern of behaviour. However, as noted in Section 1.4, previous research conducted within these disciplines has provided support
for utilising alternate approaches to investigate mobile phone behaviour. First, research conducted from a psychopathological perspective found a limited role for factors such as depression and anxiety on mobile phone behaviour (Ha et al., 2008; Jenaro et al., 2007; Sanchez-Martinez & Otero, 2008) and has concluded that such approaches may not be relevant to mobile phone behaviour (Jenaro et al., 2007). Additionally, extraversion has been found to be the most consistent individual difference predictor of mobile phone behaviour (Bianchi & Phillips, 2005; Butt & Phillips, 2008; Ehrenberg et al., 2008; Phillips et al., 2006), highlighting that consideration of social factors is warranted. Thus, this research provides a complementary perspective to understanding young people’s mobile phone behaviour. Additionally, there are a number of factors supporting the adoption of a social psychological approach in the present program of research.

Previous research has highlighted the important role that mobile phones play in facilitating contact between young people’s social groups and extending social networks (see for example, Ling, 2004; O. Peters & ben Allouch, 2005; Wei & Lo, 2006). Additionally, previous uses and gratifications research has consistently found that social gratifications are influential determinants of much mobile phone behaviour (discussed further in Section 2.3.4). Given that social psychology, as a field, focuses on people’s relationships with each other, it is believed that this perspective is highly applicable to the present program of research. Second, as noted earlier, youth are in a unique life stage during which they undergo numerous life changes impacting on identity formation and change (Arnett, 2004) and they are highly influenced by social pressures to engage in peer-approved behaviours (Smetana et al., 2006). Two major areas within the field of
social psychology with strong theoretical bases are identity and social influence. Thus, it is believed these approaches are particularly relevant to understanding young people’s mobile phone behaviour.

Third, mobile phone use occurs across all sectors of society. For this reason, it is believed that use of a psychopathological approach may restrict the population of interest from the general population to those with clinically diagnosable conditions. Additionally, it has been suggested that psychopathological factors, such as depression and anxiety, may have a stronger association with pathological addictions than with mobile phone behaviour (Jenaro et al., 2007). Thus, the present program of research adopts a social psychological approach to understanding young people’s mobile phone behaviour.

1.5.2  Aims of the Research Program

As noted in Section 1.4, there is a relative lack of psychological research investigating mobile phone behaviour. Thus, the overall goal of this research program is to improve our understanding of the relationship between social psychological variables and young people’s mobile phone behaviour. A particular focus of the research program is to explore both the cognitive and behavioural aspects of young people’s mobile phone behaviour which for the purposes of this thesis is defined as mobile phone involvement. To achieve this outcome, there are a number of aims to the research program which reflect the developmental nature of the thesis:

1:   Explore and understand patterns of young people’s mobile phone behaviour;
2:   Explore the social psychological factors relating to young people’s mobile phone behaviour;
3: Develop a measure of mobile phone behaviour which captures the cognitive and
behavioural aspects of mobile phone behaviour;
4: Examine and differentiate the predictors of frequency of mobile phone use and
mobile phone involvement among young Australians.

1.6 Chapter Summary

This chapter provided an overview of the patterns of people’s mobile phone use
in Australia and outlined reasons for the popularity of this communication technology.
The chapter particularly focussed on young Australians’ mobile phone use. The
emergence of inappropriate and problematic patterns of mobile phone behaviour were
identified and described. The chapter also reviewed relevant internet research and
previous sociological, communication, and psychological approaches to understanding
mobile phone behaviour. It was also noted that difficulties arise with relying on
frequency of use measures alone when researching mobile phone behaviour. The chapter
identified an emerging trend in mobile phone research; the suggestion that some users
are behaving in an addictive manner. A brief background to addiction perspectives was
provided and recent mobile phone research incorporating addiction symptoms in
measures assessing people’s mobile phone behaviour were reviewed. It was concluded
that adopting Orford’s (2001) approach of viewing some behavioural addictions as a
non-pathological over-attachment to, or involvement in, an activity may be appropriate
when seeking to understand people’s mobile phone behaviour.

The final section of this chapter articulated the scope and the aims of the
research program. Overall, this thesis seeks to improve our understanding of mobile
phone behaviour among Australian youth. The focus on a specific youth cohort allows
for examination of the behaviour amongst a group who are in a unique period of personal and social development and who are recognised as the most prolific users of the technology. Specifically, the thesis investigates young people’s mobile phone involvement which, for the purpose of this thesis, is defined as a person’s cognitive and behavioural association with their mobile phone. Although the thesis primarily adopts a social psychological perspective to investigating young Australians’ mobile phone behaviour, the integration of previous mobile phone research, addiction perspectives, and social psychological theories provides a unique and novel investigation of a prevalent activity among young people today. It is expected that results of the research program will provide a significant contribution to our understanding of the association between psychosocial factors and young people’s mobile phone behaviour. The next chapter, Chapter 2, provides an overview of the relevant theoretical approaches underpinning this program of research.
CHAPTER 2: THEORETICAL PERSPECTIVES INFORMING THE RESEARCH PROGRAM

2.1 Introduction

The previous chapter, Chapter 1, reviewed mobile phone literature and identified an emerging trend in mobile phone research, the incorporation of addiction symptoms into measures of mobile phone behaviour. However, rather than viewing addictive patterns of mobile phone use as a pathological condition, this thesis posits that some people are highly involved with their mobile phone such that they act in a manner similar to an addictive pattern of behaviour without experiencing the severe negative consequences present in addictions. For the purposes of this research program, mobile phone involvement is defined as the degree to which a person is cognitively and behaviourally involved with their mobile phone. This chapter, Chapter Two, opens with a description of the theoretical framework forming the foundation for this exploration of young Australians’ involvement with their mobile phones. Following this discussion, the relevant theoretical approaches used to understand young people’s mobile phone behaviour in the research program are described.

2.2 Understanding and Measuring Mobile Phone Involvement

As discussed in the previous chapter, studies which have incorporated addiction symptoms into measures of mobile phone behaviour have recently been published. Although these measures provided important information regarding mobile phone behaviour, conceptual and methodological issues have been identified. First, the measure of problematic mobile phone use developed by Bianchi and Phillips’ (2005) included items assessing social factors, such as whether friends own a mobile phone.
Rather than accepting that social influences are symptomatic of problematic mobile phone use, this thesis explores whether social factors predict young people’s involvement with their phone. The cell-phone over-use scale developed by Jenaro et al. (2007) adapted the DSM-IV TR pathological gambling criteria (APA, 2000) to mobile phone behaviour. However, this approach, which assumes that technology use has similar characteristics to gambling behaviour, may not be appropriate (Mossbarger, 2008). Various authors argue that technological addictions (if they exist) are a distinct group of behaviours (Barnstone, 2000; J. P. Charlton & Danforth, 2004; Griffiths, 1998; Shaffer, 1996; Stern, 1999) and, thus, examination and identification of symptoms specific to the behaviour is required (Lemon, 2002; Orford, 2001). Jenaro et al. (2007) themselves conclude that mobile phone behaviour appears to differ from a pathological addiction, suggesting that measures specifically relating to mobile phone behaviour are required.

Other studies which have included assessment of addiction symptoms have either not reported scale items (Ha et al., 2008) or have assessed some, but not all, of the indicators of addiction (Ehrenberg et al., 2008; Sanchez-Martinez & Otero, 2008). These studies however, reveal it is younger mobile phone users who are most likely to engage in a pattern of mobile phone behaviour which may resemble an addiction (Orford, 2001) and indicate the need for a measure explicitly assessing the cognitive and behavioural aspects of mobile phone use. This research program seeks to overcome the limitations noted in the previous studies by undertaking an in-depth exploration of young people’s
mobile phone behaviour prior to the developing a new measure of mobile phone involvement based on accepted behavioural addiction components.\(^2\)

The framework adopted in this research program to investigate the extent to which people are involved with their mobile phones is Brown’s (1993, 1997) behavioural addiction components. Brown (1997) argues that, as the range of behaviours considered to be addictive is large, it is necessary to define the parameters of what constitutes an addiction. In particular, Brown proposes that addictive patterns of behaviour develop when people seek to obtain relief from negative psychological states or to enhance positive psychological outcomes. However, it is only when the behaviour begins to severely impact on the person’s life that classification as an addiction is warranted. Thus, symptoms of addiction may be evidenced prior to the diagnosis of addiction. Similar to the DSM-IV TR substance dependence criteria (APA, 2000), Brown posits that symptoms such as tolerance, withdrawal, euphoria, cognitive and behavioural salience, conflict with other people and other activities, and relapse and reinstatement (see Table 2.1 for definitions) are present to some extent in addictive patterns of behaviour.

\(^2\) It should be noted that the measures discussed in this section (e.g., Bianchi & Phillips, 2005; Jenaro et al., 2007) were not published prior to designing and commencing data collection for the mobile phone involvement measure developed in the present research program. Thus, developing or refining these previous measures was not an option in the current program of research.
Table 2.1

*Descriptions of Brown’s (1993, 1997) Behavioural Addiction Components*

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salience - cognitive</td>
<td>The activity dominates the person’s thinking.</td>
</tr>
<tr>
<td>- behavioural</td>
<td>The activity dominates the person’s life.</td>
</tr>
<tr>
<td>Conflict - interpersonal</td>
<td>Performance of the activity leads to conflict with other people.</td>
</tr>
<tr>
<td>– other activities</td>
<td>Performance of the activity conflicts with other aspects of the person’s life.</td>
</tr>
<tr>
<td>Relief/Euphoria</td>
<td>Positive emotions result from engaging in the activity.</td>
</tr>
<tr>
<td>Loss of Control/Tolerance</td>
<td>The person loses control over how much they perform the activity as the behaviour needs to be engaged in at a greater extent to experience euphoria.</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>Unpleasant emotions are experienced when the person is unable to perform the activity.</td>
</tr>
<tr>
<td>Relapse and reinstatement</td>
<td>The activity is resumed at the same level following attempts to reduce it.</td>
</tr>
</tbody>
</table>

Brown’s (1993, 1997) components emphasise the cognitive and behavioural symptoms of addiction rather than physiological symptoms, such as physical withdrawal, which are typically present in substance-related disorders. In contrast to adapting the DSM-IV TR criteria for substance abuse and dependence which are dichotomous in nature (APA, 2000), Brown’s (1993, 1997) approach allows for a continuum measure to be developed. Using a continuum rather than a dichotomous
approach enables the increasing severity of symptoms to be assessed, thus facilitating our understanding of the developmental trajectory of addictive patterns of behaviour (Edwards & Gross, 1976). Although not previously used to assess people’s mobile phone behaviour, Brown’s (1993, 1997) components have been utilised to examine people’s use of other technologies including computers (J. P. Charlton, 2002; Giles & Price, 2008) and the internet, specifically on-line gaming (J. P. Charlton, 2005; J. P. Charlton & Danforth, 2007). In particular, the studies of Charlton and colleagues (J. P. Charlton, 2005; J. P. Charlton & Danforth, 2004, 2007; T. Charlton, Panting, & Hannan, 2002) differentiated high engagement with a technology from addictive patterns of behaviour. These studies consistently found that some people may be highly engaged with an activity to the extent that they exhibit signs of addiction without experiencing the pathologising consequences of an addiction. Thus, Brown’s (1993, 1997) components appear a suitable framework for gauging the emergence of signs of addiction among users of a relatively new technological device, the mobile phone.

As the range of behaviours considered potentially addictive is large, symptoms may vary according to the behaviour in question (Brown, 1997; Orford, 2001). For instance, tolerance in some addictions may result from physiological changes which occur as a result of the behaviour (such as neurological adaptation in substance dependence or increased fitness levels in exercise addicts), consequences which are unlikely in technology use. Additionally, the way symptoms are manifested may differ with each behaviour. For example, euphoria in internet addicts has been found to be related more to relief from negative emotions, such as loneliness, than a conscious attempt to obtain the positive emotions generally associated with euphoria in other
addictions (Whang et al., 2003). For these reasons, it is necessary to develop measures specific to the behaviour in question (Lemon, 2002).

This research program uses Brown’s (1993, 1997) behavioural addiction components as the foundation for identifying and exploring a new pattern of mobile phone behaviour, mobile phone involvement, a person’s cognitive and behavioural association with their mobile phone, amongst youth. Similar to Charlton and Danforth’s (2004, 2007) concept of high technological engagement, mobile phone involvement is posited to have similar characteristics to an addictive behaviour without the severe consequences present in an addiction. One of the aims of the research program is to develop a measure which overcomes the previously discussed limitations of previous measures of mobile phone behaviour and which adequately reflects the concept of mobile phone involvement. Additionally, the research program identifies those psychological variables believed to be associated with young people’s mobile phone behaviour.

2.3 Psychosocial Constructs Applied to Understand Young People’s Mobile Phone Behaviour

As discussed in Chapter 1, previous research has assessed the effect of clinical factors, such as depression and anxiety (Ha et al., 2008; Jenaro et al., 2007; Sanchez-Martinez & Otero, 2008) (Section 1.4.4), and personality traits, such as neuroticism and extraversion (Bianchi & Phillips, 2005; Ehrenberg et al., 2008) (Section 1.4.3), on people’s mobile phone behaviour. Given that mobile phone use is a highly social behaviour promoting contact between an individual’s family, friendship, and wider societal networks, this research program primarily adopts a social psychological
approach to investigating young people’s mobile phone behaviour. Specifically, the
thesis investigates the role that self-identity, social influence, in particular ingroup norm,
and the social motivations of belonging and self-esteem play in young people’s mobile
phone behaviour. Additionally, in a preliminary test of factors influencing mobile phone
behaviour, the uses and gratifications approach adopted by communication theorists
explores the reasons why people use their mobile phones and how this affects their
behaviour. Identifying the uses and gratifications underlying people’s frequency of
mobile phone use and indicators of addiction among mobile phone users (an abridged
version of mobile phone involvement) supports the inclusion of more specific
psychosocial variables in the later stages of the research program. Although not
exhaustive, this combination of perspectives provides a broad understanding of the self
and social influences on young people’s mobile phone behaviour.

2.3.1 Self-identity

An individual’s self-identity comprises a combination of enduring
characteristics, such as internalised goals, values, moral concerns, and affective
components, as well as externalised roles and behaviours (Gergen, 1971; Stryker, 1987).
Within the literature, there is much debate regarding the formation of self-identity and
the relationship between self-identity and behaviour. For example, some theorists argue
that social reinforcement of behaviour leads to the behaviour becoming part of the
individual’s self-identity (McCall & Simmonds, 1978) whereas others argue that
individuals incorporate various roles, and related behaviours, performed throughout
their life into their self-identity (Stryker, 1987). Alternatively, other authors posit that
the incorporation of material goods into our self-concept also influences behaviour
Mobile phone involvement

(Dittmar, 2004a). Common to the various definitions is that self-identity is formed when valued characteristics, which individuals believe define who they are, become integrated into the individual’s self-concept (Thoits & Virshup, 1997).

Self-identity is expressed by the way in which people interact with the environment through mental and physical objects with the effect varying as easily accessible beliefs and attitudes become salient (Conner & Armitage, 1998; Prentice, 1987). Those behaviours which are most prominent in our self-identity are most likely to be performed. Previous research has found that self-identity has influenced a wide range of behaviours including organic food consumption (Sparks & Shepherd, 1992), contraceptive use (Fekadu & Kraft, 2001), consumer purchasing (J. R. Smith et al., 2007), and computer use (Shotton, 1991). These studies indicate that people who identify strongly as a person who performs the relevant behaviour and who value the behaviour as an important part of their life are likely to engage in continued behavioural performance.

One way in which individuals reflect their self-identity is through their ownership and use of material objects (Dittmar, 1992, 2004a; Prentice, 1987). Possessions which can be individualised and used as a means of self-expression are valued if they can be modified to reflect a person’s self-concept and may become part of the person’s extended self (Belk, 1988; Prentice, 1987). This notion is explored by Dittmar (1992) who argues that material possessions can become a symbolic representation of our attitudes, values, and our position in society. Thus, ownership and use of objects which present a positive self-image is highly valued (Dittmar, 1992) and can influence addictive patterns of behaviour (Dittmar, 2005). This effect appears more
prevalent in young people who are developing their sense of self away from the constraints of family and schooling (Arnett, 2004) and, thus, may be more likely to incorporate material goods into their self-concept. In her research of material goods and compulsive buying, Dittmar (2005) found that younger people were more likely to have a materialist orientation and to believe that various objects had the potential to enhance their mood. The psychological benefits perceived to be derived from material goods increases the likelihood that the object will become incorporated into the person’s sense of self (Dittmar, 1992). Young mobile phone users particularly value mobile phones as a status symbol and use the phone as a form of identity expression by decorating their phone, downloading unique ringtones, and having individually chosen screen-savers (Katz & Sugiyama, 2005). Thus, mobile phones have become an important part of many young adult’s self-identity (Lloyd, 2007) to the extent that some young people perceive they are nothing without their phone (Sanchez-Martinez & Otero, 2008).

Using a mobile phone a form of self-expressive identity has been found to influence intention to purchase a mobile phone (Mannetti, Pierro, & Livi, 2002) and number of calls made on a mobile per month (Reid & Reid, 2007). Additionally, self-identification as a mobile phone user has predicted high level mobile phone use amongst a cohort of Australian university students (Walsh & White, 2007). As it is argued that high level mobile phone use may be similar to an addictive pattern of behaviour (Wilska, 2003), the relationship between self-identity and young people’s mobile phone behaviour is further explored in this study. In addition to developing their self-identity, adolescents and young adults are at a life-stage of identity change in which they are investigating their relationship with other people in a wider social context (Smetana et
al., 2006). Thus, this thesis also explores how social identity processes relate to young people’s mobile phone behaviour.

### 2.3.2 Social Identity

The social identity theory/self-categorisation theory perspective posits that behaviour is related to people’s connection to, and membership of, various social groups (Hogg & Abrams, 1988; Turner, 1991, 1999). According to social identity theory, the self is socially constructed with group memberships and shared intra-group characteristics influencing the individual’s self-concept. In particular, self-categorisation into a relevant referent group strengthens the value of group membership to the individual, leading to the formation of a social identity. By the process of referent informational influence, people search for relevant group norms which become a reference point for their beliefs, attitudes, and behaviours. The construction of context-specific group norms, and the internalisation of these norms as their own, subsequently influences a person’s behaviour as they seek to act in a manner congruent with their ingroup to gain group members’ approval, particularly when social identity is salient (Hogg & Abrams, 1988; Turner, 1991, 1999).

Although social influence is most likely to affect behaviour under conditions when the group is present, internalisation of perceived group norms is believed to influence behaviour in contexts removed from the group presence (Ellemers, Spears, & Doosje, 2002). In particular, people are likely to behave in accordance with ingroup norms in conditions of high salience (White, Hogg, & Terry, 2002). Positive reinforcement of behaviour within a group makes it more likely that the person will continue to perform the behaviour, particularly if they value membership of the group.
A key tenet of social identity theory is that ingroup members are viewed favourably whereas people who are not members of the group (outgroup) are viewed less favourably. Thus, it is the members of valued social groups who have the most impact on behaviour (Hogg & Abrams, 1988; Turner, 1991). In addition to ingroup norms influencing behaviour, people also seek out and associate with similar others who engage in the behaviour, thus reinforcing continued behavioural performance (Orford, 2001).

Social identity has been found to influence many behaviours among young people including arcade game playing (Fisher, 1995), binge drinking (Johnston & White, 2004), speeding (Conner, Smith, & McMillan, 2003), and suntanning (Poorsattar & Hornung, 2006). Although there has been no previous exploration of the specific role of social identity for mobile phone use, a role for social identity factors has been revealed in internet use. For instance, online game players strongly associate as a member of this group (Longman et al., 2009) and are subsequently more likely to participate in the activity (C. S. Peters & Malesky, 2008). General internet use is also influenced by social identity processes with the amount and type of many people’s internet use being determined by which internet modality (e.g., instant messaging or social networking) is preferred amongst their social group and how often their friends and peers are using the technology (Valkenburg & Peter, 2007; Valkenburg et al., 2006; Wolak et al., 2003).

With respect to mobile phone behaviour, Cassidy (2006) posits that mobile phone use is an important part of group membership and young people who seek to be viewed positively among their friends and peers will be more likely to use their phone.
Similarly, Orford (2001) argues that positive reinforcement from others is highly influential on the development of much excessive behaviour and, thus, people’s social context should be considered when assessing behavioural patterns. In addition to social identity processes influencing behaviour once a person is a member of a relevant referent group, people have a desire to form attachments with others to increase their sense of their belonging and their self-esteem often emanates from these social relationships. Thus, social motivations may also underlie mobile phone behaviour.

2.3.3 Social Motivations: Belonging and Self-esteem

Social motivations underlie much social behaviour and guide the way people seek to interact with others (see Fiske, 2002). In general, motivations arise from a complex interaction of a person’s needs, desires and concerns, as well as contextual and situational variables, and stimulus attributes (Pittman, 1998). People actively decide why, when, and how to use objects, such as telecommunication devices, and will find and utilise the device which most effectively meets a specific need (Higgins, Strauman, & Klein, 1986; Pittman, 1998). There are five commonly agreed social motives; shared understanding (Augoustinos & Innes, 1990); control (Pittman & Pittman, 1980); trust (Yamagishi, 2002); self-enhancement or self-esteem maintenance (Leary, Tambor, Terdel, & Downs, 1995); and belonging (Baumeister & Leary, 1995). These five motivations are believed to enhance an individual’s survival in groups (Fiske, 2002).

Understanding (Augoustinos & Innes, 1990) and control (Pittman & Pittman, 1980) are primarily cognitive motivations as they relate to a person’s desire to understand themself and the world around them and to control their environment. Trust (Yamagishi, 2002) and self-enhancement (Leary et al., 1995) are affective motives, in
that, the way the person feels about his or herself and their environment influences their
behaviour. The foundation for the self-enhancement motive is self-esteem maintenance
or improvement. Self-esteem is related to an individual’s perception of their value or
worth as a person and youth, in particular, often base their self-esteem on their
relationships with others (Rosenberg, 1965). A person’s self-esteem influences their
perceptions of how they have been treated by others and, therefore, affects a person’s
interpretation of control, understanding and trust (Leary et al., 1995). Self-esteem is also
associated with the final motivation, belonging, (Baumeister & Leary, 1995) which is
posited to underpin the other four social motives (Fiske, 2002).

Belonging, or the need for strong stable relationships, motivates people to
engage in activities which promote the formation and maintenance of social bonds
(Baumeister & Leary, 1995). In contrast to social identity which develops once people
join relevant groups (Hogg & Abrams, 1988; Turner, 1999), the need to belong
motivates people to seek out such memberships (Baumeister & Leary, 1995). People
with a high need to belong frequently engage in behaviours which develop personal
contacts and cultivate social relationships in order to feel connected to other people. A
feeling of belonging provides a sense of attachment and feelings of value subsequently
increasing a person’s psychological adjustment. In contrast, lack of belonging is related
to poor mental well-being and low self-esteem (Baumeister, 1991). As self-esteem is
important for overall psychological health, the relationship between self-esteem and
people’s need to belong is a key consideration when examining much social behaviour
(Baumeister, Tice, & Hutton, 1989).
Ownership and use of a technologically advanced mobile phone has been found to be a status symbol for some users which suggests that mobile phone ownership may enhance an individual’s self-esteem (Ozcan & Kocak, 2003). However, the direct effect of self-esteem on mobile phone behaviour is less clear as contradictory results have been found. For instance, some authors have found that low self-esteem predicted problematic (Bianchi & Phillips, 2005) and excessive mobile phone use (Ha et al., 2008). However, other authors report no relationship between self-esteem and the amount of mobile phone use (Butt & Phillips, 2008; Ehrenberg et al., 2008; Phillips et al., 2006) or addictive tendencies for mobile phone use (Ehrenberg et al., 2008). Self-esteem is particularly important for building resilience with young people who have low self-esteem being more likely to engage in risky and unhealthy behaviours (Veselska et al., 2009). However, the formation of close bonds with friends facilitates positive self-esteem in young people (Laible et al., 2004) such that young people are often motivated to form attachments to others to improve their sense of self-worth (Mruk, 2006). As feelings of belonging are related to higher levels of self-esteem (Gaillot & Baumeister, 2007) and mobile phones promote connection to others (O. Peters & ben Allouch, 2005; Wei & Lo, 2006) it may be that both belonging and self-esteem relate to young people’s mobile phone behaviour.

The relationship between the need to belong and people’s mobile phone behaviour has yet to be investigated. However, one study which sheds some light on the relationship between belonging and mobile phone behaviour was conducted by A. Smith and Williams (2004). Rather than examining people’s need to belong as predictive of mobile phone behaviour, these authors assessed how exclusion from text messaging
between other people affected feelings of belonging. It was found that ostracism from
text message conversations reduced participants’ levels of belonging, resulting in lower
feelings of self-esteem with ostracised participants reporting feeling angry about their
non-inclusion in the SMS conversation. However, once participants were included in the
text messaging conversations, their feelings of belonging increased (A. Smith &
Williams, 2004). Mobile phones are highly valued for enhancing social inclusion (O.
Peters & ben Allouch, 2005; Wei & Lo, 2006), with lonely people using mobile phones
to increase their connection to others (Reid & Reid, 2007). As these results suggest that
individuals may be motivated to use their mobile phone to increase their feelings of
connection to others and belonging is related to self-esteem, this research will explore
the role of these two social motivations for young people’s mobile phone behaviour.

2.3.4 Uses and Gratifications

As mentioned in Section 1.3.2, uses and gratifications theory has been adopted
by some communication theorists to understand reasons for, and outcomes of, mobile
phone use in a number of countries including the United States (Wei, 2008), Holland (O.
Peters & ben Allouch, 2005), Hong Kong (Leung & Wei, 2000), and Turkey (Ozcan &
Kocak, 2003). Uses and gratifications theory posits that people are motivated to use
communication technologies which gratify social and psychological needs such as social
identification, interpersonal communication, and entertainment (Ruggiero, 2000). The
more practical and psychological needs an object fulfil, the more likely a person will use
the object. Understanding which gratifications are fulfilled by use of particular media is
believed to improve understanding of how and why communication media, such as
newspapers, television, and the internet are incorporated into people’s lives. In
particular, technologies which are believed to provide lifestyle enhancement without significant cost are more likely to be adopted rapidly. Although widely used in the communications research arena, the uses and gratifications approach has been criticised for a lack of a rigorous methodological approach (Ruggiero, 2000). Rather than using consistent measures, new items are usually created for each study with different terminology being used to describe the gratification.

Although this inconsistency may be seen by some as a limitation, the construction of items specific to both the behaviour and the context of the research facilitate the examination of new behaviours in new environments. Thus, the approach is useful for exploring reasons for technology use in new contexts rather than providing consistent measurement across a range of studies (Ruggiero, 2000). An additional strength of the uses and gratifications approach is the ability to examine both individual item responses and, following factor analysis, to form broad categories of reasons underlying people’s use of technologies giving both a micro and macro understanding of the reasons for technologies use and the gratifications arising from the behaviour. In general, uses and gratifications research identifies both psychological and practical factors relating to technology use.

Previous uses and gratifications research commonly finds three main gratifications relating to mobile phone behaviour (see also Section 1.3.2). First, social purposes commonly influence mobile phone behaviour as the phone is believed to increase social inclusion and provide a constant physical and psychological connection to others (O. Peters & ben Allouch, 2005; Wei & Lo, 2006). Second, fulfilment of self gratifications is reported regularly as a reason for mobile phone use with the phone
being used as a status symbol and a fashion item. Additionally, mobile phones are believed to reflect a person’s lifestyle (Leung & Wei, 2000; Ozcan & Kocak, 2003). Finally, instrumental (functional) purposes such as arranging transport, using the phone in an emergency, and business use are also reported (Pain et al., 2005; Wei, 2008). An interesting finding in the uses and gratifications research is that fulfilment of psychological needs (such as attachment to others) has more influence on mobile phone behaviour than practical use. However, in addition to frequently using their phone, people who derive psychological benefit from having a mobile phone are more likely to keep the phone close by them to maintain a sense of constant connection with others (O. Peters & ben Allouch, 2005; Wei & Lo, 2006). Additionally, young women who travel alone and carry a mobile phone for safety purposes may not use the phone frequently but keep the phone readily in consciousness and easily available in case they need to contact someone in case of emergency when they are alone at night (Carroll et al., 2002). These findings indicate that mobile phone behaviour comprises both cognitive and behavioural aspects.

As yet, there has not been an application of uses and gratifications theory to explore Australians’ mobile phone behaviour. For this reason, this thesis applies uses and gratifications theory to gain an initial insight into the psychological and practical factors underlying mobile phone behaviour in Australia. The incorporation of the uses and gratifications approach in the thesis to assess young people’s frequency of mobile phone use and indicators of addiction (a pre-cursor to the mobile phone involvement questionnaire developed in the study) bridges the qualitative and quantitative components of the research program and, should social gratifications arise as being
associated with these behaviours, is expected to confirm the approach emphasising social psychological facets of young people’s mobile phone behaviour. Thus, inclusion of a uses and gratifications component in the present research program will assist in determining the appropriateness of the research direction and is expected to support the choice of more specific psychosocial predictors used throughout the program of research.

2.4 Chapter Summary

Mobile phone use is an increasingly prevalent social behaviour; however, there is little research investigating psychological factors underlying mobile phone behaviour. Although mobile phone use has been found to produce a number of positive benefits, negative outcomes from mobile phone use are becoming more widely reported. Additionally, addictive tendencies have been noted amongst some mobile phone users. To explore this phenomenon further, this thesis develops a measure of mobile phone involvement to assess the cognitive and behavioural aspects of mobile phone behaviour amongst the most prolific users of mobile phones, youth aged between 15 and 24 years. Given the social nature of mobile phone use, the research program investigates mobile phone use from a primarily social psychological perspective. It is hoped that inclusion of these factors, such as self-identity, ingroup norm, the need to belong, and self-esteem will advance theoretical knowledge of the relationship between social motivations and identity within a cohort that is undergoing identity change.

Given the previous lack of psychologically-based research into mobile phone use in general, the aim of this program of research is to contribute to our understanding of the factors influencing young people’s mobile phone behaviour. In particular, the
development of a new measure of mobile phone behaviour which assesses the cognitive and behavioural aspects of mobile phone behaviour provides a novel foundation for exploring the psychosocial influences on this behaviour. The research program is unique in that it adopts a multi-disciplinary approach by drawing on communication, social psychological, and addiction theories to broadly inform the research program. Additionally, the inclusion of uses and gratifications theory approach, in one stage of the research program, to bridge the gap between the qualitative and quantitative stages of the program of research provides an indication of the relevance of the more specific psychosocial predictors which are included in the later stages of the research program. In particular, the program of research aims to extend previous research investigating how self-identity and self-esteem relate to mobile phone behaviour and also to explore the effect of two constructs which have previously not been assessed in relation to mobile phone behaviour, social identity, in particular ingroup norm, and the need to belong. This combination of psychological variables is expected to contribute to our overall understanding of psychosocial factors underpinning an increasingly prevalent social behaviour among Australian youth.
CHAPTER 3: OVERVIEW OF THE RESEARCH PROGRAM BY PUBLICATION

This thesis adopts a social psychological approach to investigate mobile phone behaviour amongst a cohort of Australian youth aged between 15 and 24 years. Chapter 1 discussed relevant mobile phone literature and revealed that a new trend in the literature is to include symptoms of addiction in measures of mobile phone behaviour. Although this previous research has indicated that some mobile phone users may be acting in a manner similar to an addictive behaviour, it is not yet clear that the debilitating outcomes necessary for the diagnosis of addiction are occurring. For this reason, the present program of research uses the term mobile phone involvement, rather than addiction, when referring to people’s cognitive and behavioural association with their mobile phone.

Chapter 2 outlined the theoretical underpinnings of the research program and presented Brown’s (1993, 1997) behavioural addiction components as a broad foundation for this investigation of young people’s mobile phone behaviour. Additionally, the specific social psychological perspectives adopted throughout the program of research were reviewed. The following sections describe the nature of the research program and the structure of this dissertation. As this PhD dissertation is a thesis by publication, an overview of each paper and the contribution of each paper to the research aims are included in Section 3.3.

3.1 Structure of the Research Program

As shown in Figure 3.1, the research program comprised three distinct stages with one study forming the foundation of each stage. A variety of data collection techniques including both qualitative and quantitative methods were used throughout the
research process. Although each study of the research program was distinct, the research program itself was developmental in nature as each stage built on the findings of the previous stage. It must be noted that the target cohort for the research program was young Australians aged between 15 and 24 years. However, for ethical and practical reasons, minor participants were drawn from students in the senior years of high school (Years 11 and 12). Due to this recruitment restriction, 15 year old participants were only able to be included in one of the three stages of the research program.
**Stage 1: A qualitative exploration of young people’s mobile phone behaviour**

**Aims:** Explore patterns of mobile phone behaviour among Australian youth

- Explore social psychological factors relating to mobile phone behaviour

**Method:** Focus group discussions (N = 32) followed by thematic data analysis

<table>
<thead>
<tr>
<th><strong>Paper 1</strong></th>
<th><strong>Paper 2</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifies the role of mobile phone use in young people’s lives</td>
<td>Explores social psychological concepts in relation to young people’s mobile phone behaviour</td>
</tr>
<tr>
<td>Explores the emergence of Brown’s behavioural addiction components in young people’s descriptions of their mobile phone behaviour</td>
<td>Discusses how belongingness and social identity relate to mobile phone use</td>
</tr>
</tbody>
</table>

**Stage 2: Developing a measure of mobile phone behaviour and exploring factors influencing mobile phone behaviour**

**Aims:** Develop a measure of mobile phone behaviour by integrating the results of Stage 1 with Brown’s (1993, 1997) behavioural addiction components

- An initial investigation into the factors influencing young people’s mobile phone behaviour

**Method:** Cross-sectional pencil and paper quantitative survey (N = 946) followed by factor analysis and regression analysis

<table>
<thead>
<tr>
<th><strong>Paper 3</strong></th>
<th><strong>Paper 4</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Explores the presence of addiction indicators amongst Australian youth</td>
<td>Develops the mobile phone involvement questionnaire (MPIQ) which gauges the cognitive and behavioural aspects of mobile phone behaviour</td>
</tr>
<tr>
<td>Adopts a uses and gratifications approach to understand and predict young people’s mobile phone behaviour</td>
<td>Assesses the role of self-identity and validation from others for young people’s frequency of mobile phone use and mobile phone involvement</td>
</tr>
</tbody>
</table>

**Stage 3: Assessing the psychosocial predictors of young people’s mobile phone behaviour**

**Aims:**

- Gauge the relationship between frequency of mobile phone use and mobile phone involvement
- Develop a model to identify the relationship between psychosocial variables and both frequency of mobile phone use and mobile phone involvement

**Method:** Cross-sectional online quantitative survey (N = 292) followed by structural equation modelling

<table>
<thead>
<tr>
<th><strong>Paper 5</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifies the effect of demographic factors, self-identity, ingroup norm, and the need to belong on frequency of mobile phone use and mobile phone involvement</td>
</tr>
<tr>
<td>Explores a mediated relationship between self-esteem and the need to belong on mobile phone involvement</td>
</tr>
<tr>
<td>Improves our understanding of the relationship between psychosocial variables in the context of young people’s mobile phone behaviour</td>
</tr>
</tbody>
</table>

*Figure 3.1. Overview of the research program and relevant manuscripts*
3.1.1 Stage 1

Stage 1 aimed to investigate patterns of mobile phone behaviour amongst young Australians and to develop an understanding of the psychosocial factors influencing their use of mobile phones. Additionally, Stage 1 sought to identify whether addictive characteristics were evident in young Australians’ mobile phone behaviour. To achieve these aims, Study 1 was a qualitative exploration of mobile phone amongst Australian youth, aged between 16 and 24 years. In total, 32 participants took part in a series of focus groups to discuss their mobile phone behaviour. Thematic data analysis was utilised to explore data for the major theoretical approaches of this research program.

There are a number of reasons supporting the use of a focus group methodology in the first study. First, discussion amongst focus group participants allows shared views to become apparent subsequently building rich themes in the data (Fern, 2001). Additionally, by supporting and encouraging participants, the researcher allows differences in the thoughts and beliefs of participants to emerge. This process enables the researcher to develop an understanding about the complex nature of people’s behaviour (Greenbaum, 2000). Finally, the findings from focus group research can provide a solid foundation for the design and implementation of quantitative studies (Mitchell, 2004). As Stage 1 aimed to provide an initial exploration of young Australians’ mobile phone behaviour and formed the foundation for the ongoing research program, a focus group methodology was considered appropriate for this stage. To facilitate data transcription, all focus groups were audio-recorded with participants signing consent forms for audio-recording. Parental consent was obtained for the minors under 18 years of age who participated in the study. To meet the aims of the study, a
structured discussion guide comprising opening questions was developed. Discussion was allowed to move beyond the specific question to allow for new concepts to be explored. Appendix A contains the participant information sheets and the discussion guide used during data collection.

The qualitative approach adopted in Study 1 allows the first stage of the research program to contribute to a number of the overall aims of the program of research. The study contributes to the first aim of the research program by exploring young people’s mobile phone behaviour. Study 1 also contributes to the second aim of the research program by exploring social psychological factors; in particular, the need to belong and social identity, relating to young people’s mobile phone behaviour. Finally, by exploring the presence of addiction symptoms amongst young people’s descriptions of their mobile phone use, Study 1 laid the foundation for the development of a new measure of mobile phone behaviour, the third aim of the research program. Two manuscripts, Papers 1 and 2, (Chapters 4 and 5), discussed in Sections 3.3.1 and 3.3.2, were prepared in this first stage of the research program. Paper 3 (Chapter 6), discussed in Section 3.3.3, includes a brief discussion of some of the findings of Stage 1.

3.1.2 Stage 2

The second stage of the research program sought to develop a parsimonious measure of mobile phone behaviour which captured the cognitive and behavioural aspects of people’s relationship with their mobile phones. The stage also sought to provide a preliminary investigation into factors underlying young people’s mobile phone behaviour. To achieve these aims, a quantitative study, Study 2, was conducted in which 946 participants aged between 15 and 24 years completed a questionnaire. Most
participants completed the questionnaire during testing sessions at schools and universities in Brisbane, Queensland, Australia. Additionally, participants from other parts of Australia completed emailed versions of the questionnaire. Parental consent was obtained for any minors who did not complete the questionnaire under parental consent agreements with their educational institution.

As the primary aim of Study 2 was to develop a measure of the cognitive and behavioural aspects of mobile phone behaviour, participants’ descriptions of addictive patterns of behaviour revealed in Study 1 were adapted to the framework of Brown’s (1993, 1997) behavioural addiction components (see Section 2.2 for a review) to create a pool of 25 items. Factor analytical and item selection procedures were used to develop the Mobile Phone Involvement Questionnaire (MPIQ). In addition, a number of items assessing the uses and gratifications (see Section 2.3.4 for a review) underlying mobile phone behaviour were included in the questionnaire. Although widely used overseas, this approach had not previously been used in Australia. The first principles based perspective of the uses and gratifications framework, in which items are developed from qualitative data or previous research, provides a link between the qualitative and quantitative components of the research program and allows for identification of the most relevant gratifications to young Australian’s mobile phone behaviour. Finally, the questionnaire included items assessing self-identity and validation from others in the context of mobile phone behaviour. Appendix B contains the participant information sheets, consent forms, and the questionnaire used during data collection.

Stage 2 contributes to the first, third, and fourth aims of the research program by improving our understanding of patterns of young people’s mobile phone behaviour;
developing a new measure of mobile phone behaviour (the MPIQ) which gauges the
cognitive and behavioural aspects of mobile phone behaviour; and examining and
differentiating the predictors of frequency of young people’s mobile phone use and their
level of involvement with their mobile phone. Papers 3 and 4 (Chapters 6 and 7),
discussed in Sections 3.3.3 and 3.3.4, were prepared during this second stage of the
project.

3.1.3 Stage 3

The final stage of the research program sought to improve our understanding of
the role of psychological variables for young Australians’ frequency of mobile phone
use and their mobile phone involvement. Additionally, Stage 3 aimed to explore the
relationship between social psychological variables within the context of mobile phone
behaviour. To achieve these aims, Study 3, an on-line quantitative survey was
conducted. The participant information sheets and the questionnaire used in data
collection are contained in Appendix C.

The study was advertised by emailing details to youth groups, schools, and
universities; and posting information about the study on various youth news e-lists
throughout Australia. Participants accessed the survey via a specific website created to
host the study. Due to difficulties in obtaining on-line parental consent for minor
participants aged 15 years, the minimum age for this study was 16 years. Thus,
participants in this study were young Australians aged from 16 to 24 years. Age
screening questions were included on the introduction page of the survey and
participants who were not in the required age range were unable to access the
questionnaire. In all, 303 potential participants accessed the survey; however, 11 of
these respondents did not complete the full questionnaire. Thus, data from 292 participants were analysed.

The study assessed the effect of psychosocial variables on young people’s frequency of mobile phone use and their mobile phone involvement and, thus, contributes to the fourth aim of the research program. Specifically, the study explored the influence of self-identity, ingroup norm, the need to belong, and self-esteem on young people’s mobile phone behaviour. Results also revealed a number of links between the social psychological predictors assessed in the study. The fifth paper (Chapter 8) of the research program, discussed in Section 3.3.5, was prepared during Stage 3.

3.2 Structure of Thesis

Chapter 1 discussed the popularity of mobile phone use in Australia and also identified the emergence of problematic mobile phone use. A particular focus of the chapter was on describing young people’s mobile phone behaviour with young people being identified as the group most likely to engage in problematic mobile phone use (e.g., when driving). The findings of mobile phone research conducted from sociological and communication perspectives were discussed with the benefits of mobile phone use being highlighted. Difficulties in relying on frequency of use measures alone were identified and it was argued that new measures of mobile phone behaviour are warranted to improve our understanding of young people’s involvement with their mobile phones. The chapter introduced and discussed a recent trend in some psychologically based mobile phone research, adoption of an addiction perspective when designing measures of mobile phone behaviour.
Chapter 2 outlined the theoretical underpinnings of this thesis. Brown’s (1993, 1997) behavioural addiction components were presented as the foundation for investigating young people’s involvement with their mobile phone in the present program of research. Given the social nature of mobile phone use, that youth are developing their sense of identity, and that youth are particularly responsive to the influence of friends and peers, the thesis utilises a social psychological perspective to investigate young people’s mobile phone behaviour. Thus, the theories underlying the specific variables assessed in this thesis, self-identity, social identity (in particular, ingroup norm), the need to belong, and self-esteem, were reviewed in Chapter 2 and the potential relationship of these factors to young people’s mobile phone behaviour was discussed. Finally, a uses and gratifications approach drawn from established communication research was discussed as a framework for a preliminary exploration of the psychological and practical factors underpinning young people’s mobile phone behaviour and as a method for identifying the appropriateness of the inclusion of more specific social psychological predictors throughout the program of research.

This chapter, Chapter 3 presents the scope, aims, and structure of the research program. In particular, the three studies forming the foundation of each stage of the research program are discussed and the papers prepared from each stage are identified. The following section describes each paper and discusses each paper’s contribution to the overall program of research. Chapters 4, 5, 6, 7, and 8 comprise the papers prepared throughout the PhD program of research. The final chapter, Chapter 9, provides an overview of the findings of the research program and discusses the theoretical and applied implications of the findings. Additionally, Chapter 9 reviews the strengths and
limitations of the research program and provides suggestions for future research in this growing research arena.

3.3 Overview and Contribution of the Papers to the Research Aims

As mentioned previously (Section 3.1), the program of research consisted of three distinct stages with five papers prepared throughout the research program. Figure 3.1 illustrates the stages of the research program, the placement of the papers within the program of research, and the contribution of each paper to the overall aims of the research program. This section provides an overview of each paper and identifies the contribution of each paper to the overall aims of the research project. As the theoretical foundations of the thesis were discussed in Chapter 2 and each paper contains an introductory section developing the specific theoretical rationale and hypotheses for the paper, this information is not duplicated in this section.

3.3.1 Paper 1


This paper provided an initial exploration of patterns of mobile phone behaviour amongst young Australians. Based on the qualitative data obtained from the focus groups of young Australian mobile phone users, the paper provided a rich, in-depth investigation of general mobile phone behaviour, the perceived advantages and disadvantages of mobile phone use, and the participants’ perspectives on the addictive potential of mobile phone use. Additionally, the paper adopted a thematic data analysis approach to identify whether the behavioural addiction indictors proposed by Brown
(1993, 1997) emerged in participants’ descriptions of their mobile phone behaviour. Thus, the paper contributes to the first aim of the research program by improving our understanding of young people’s mobile phone behaviour. The paper also contributes to third aim of the research program by providing a solid foundation for developing the mobile phone involvement measure in the later stages of the research program.

3.3.2 Paper 2


Paper 2 contributes to the second aim of the research program by exploring the social psychological factors relating to young people’s mobile phone behaviour. Like Paper 1, this paper drew on the rich qualitative data obtained from the focus groups comprising young Australian mobile phone users. The paper particularly focussed on identifying how the need to belong (Baumeister & Leary, 1995) and social identity processes (Hogg & Abrams, 1988; Turner, 1991) relate to young people’s mobile phone behaviour. It is noteworthy that ingroup norms emerged as influencing the choice of carrier and type of mobile phone behaviour amongst youth. The information obtained in this paper provided an indication of those social psychological variables which may be predictive of young people’s mobile phone behaviour.
3.3.3 Paper 3


By combining the first and second stages of the research program, this paper contributes to the first (understanding patterns of mobile phone behaviour) and fourth (examining the predictors of mobile phone behaviour) aims of the project. The paper first drew upon the data obtained from the focus groups in Stage 1 of the research program to provide a brief discussion of the reasons young people use their mobile phones and indications of addictive characteristics in young people’s descriptions of their mobile phone behaviour. The paper then adopted a uses and gratifications theory framework (Ruggiero, 2000) to quantitatively understand the gratifications arising from mobile phone use and which gratifications had the most influence on young people’s frequency of mobile phone use and to explore, in a preliminary manner, the gratifications relating to three indicators of addiction (withdrawal, salience, and loss of control). These indicators were selected to gain an insight into whether inclusion of addiction items in the measure of mobile phone involvement developed in the later stages of the research program was appropriate. Three major gratifications, self, social, and security, were found to relate to mobile phone use amongst young Australians. By finding that self and social gratifications predicted frequency of use and the three addiction indicators, the results in this study signalled that the direction of the research
program was appropriate. Paper 3 provided preliminary support for the development of the mobile phone involvement measure and the inclusion of more specific social psychological variables in the later stages of the research program.

3.3.4 Paper 4


The aim of this paper was to develop a measure of mobile phone behaviour representing the degree to which people cognitively and behaviourally interact with their mobile phone. A pool of 25 items, created by combining the descriptions participants used to describe their mobile phone behaviour in the earlier focus groups (Paper 1) with Brown’s (1993, 1997) behavioural addiction components were submitted to factor analysis to produce the eight-item Mobile Phone Involvement Questionnaire (MPIQ). This paper, then, contributes to the third aim of the research program, the development of a measure assessing the cognitive and behavioural aspects of mobile phone behaviour.

In addition to developing the MPIQ, the paper also provided a preliminary examination of the role of self-identity and validation from others for young people’s mobile phone behaviour, contributing to the fourth aim of the research program; examining and differentiating the predictors of the frequency of young people’s mobile phone use and their mobile phone involvement. It is noteworthy that self-identity predicted both young people’s frequency of mobile phone use and their mobile phone involvement whereas validation from others only predicted young people’s involvement
with their mobile phone. This finding suggests that some young people are motivated to use their mobile phone to enhance their self-esteem and provided a strong indication that social motivations would be relevant predictors for inclusion in the more specific examination of psychosocial factors influencing young people’s mobile phone behaviour undertaken in Paper 5.

3.3.5 Paper 5


This final paper of the research program extends on the findings of Paper 4 by including more specific social psychological factors as predictors of young people’s mobile phone behaviour. Thus, Paper 5 reports an empirical investigation of the predictors of frequency of mobile phone use and mobile phone involvement amongst Australian youth. The paper explored the effect of demographic factors, self-identity, ingroup norm, the need to belong, and self-esteem on both the frequency of young people’s mobile phone behaviour and the level of their involvement with their mobile phone. The inclusion self-esteem and the need to belong in this paper expanded on the findings of Paper 4 by exploring how young people are motivated to use their mobile phone to enhance their psychological well-being. Additionally, the paper allowed for a comparison of the effect of self and social identity influences on young people’s mobile phone behaviour and revealed that different factors influenced young people’s frequency of mobile phone use and their level of mobile phone involvement. Self-identity was related to both behaviours, whereas ingroup norm and the need to belong were associated with young people’s mobile phone involvement but not their frequency of
use. Additionally, an indirect role for self-esteem, via the need to belong, was found for young people’s mobile phone involvement. Thus, this paper contributes to the fourth aim of the research program to examine and differentiate the predictors of young people’s frequency of mobile phone use and their mobile phone involvement.

3.4 Chapter Summary

This chapter provided an overview of the PhD program of research. In particular, the chapter identified the scope of the research program, articulated the aims of the research program, described each stage of the research program and the relevant studies in each stage, and, finally, reviewed the papers forming the foundation of this thesis. The final section of the chapter discussed the placement of each paper in the research program and the contribution of each paper to the overall aims of the research project.

As noted previously, Chapters 4, 5, 6, 7, and 8, comprise the papers prepared throughout the program of research. In accordance with the regulations of a thesis by publication, these papers have either been published, are accepted for publication, or are under review for publication. The papers in this thesis are presented as they appear in published form, or, where not yet published, in the form in which they were submitted for review. To improve readability, references from the papers have been combined to form one reference list at the end of the thesis. A consequence of this has been that the citation details of some references in the papers have been updated to reflect changes in publication status that occurred since submission or publication of the original paper (for example, Walsh and White [in press] becomes Walsh and White [2007]). Additionally, the first listing of a citation with multiple authors in each paper (e.g., Walsh, White & Young) has been shortened (e.g., Walsh et al.) if they have previously been cited in the
thesis. To maintain consistency with the original papers, some acronyms used in the
thesis will appear in full in the chapters comprising the reproduced papers.
CHAPTER 4: OVER-CONNECTED? A QUALITATIVE EXPLORATION OF THE RELATIONSHIP BETWEEN AUSTRALIAN YOUTH AND THEIR MOBILE PHONES

4.1 Notes

This paper is reproduced from:


The candidate is first author on this published paper and was responsible for all aspects of manuscript preparation including reviewing the literature, developing the rationale for the research, conducting the focus groups which formed the data collection method, transcribing and analysing the focus group data, interpreting the research findings, and writing the manuscript. The second and third authors are members of the candidate’s supervisory team and their contribution has been supervisory in nature. All co-authors provided permission for this paper to be included in this PhD dissertation.

The journal in which this paper has been published is a peer reviewed international journal. The journal is listed in the Social Sciences Citation Index and is recognised for the Higher Education Research Data Collection (HERDC). The 2007 Impact Factor for this journal is 1.207. The copyright conditions of the publisher allow for inclusion of the paper in this PhD dissertation.

The data collection instruments used in the study reported in this paper are contained in Appendix A.
4.2 Abstract

In Australia, youth are the most prolific users of mobile phones, however, there is little research investigating this phenomenon. This paper reports a qualitative exploration of psychological factors relating to mobile phone use amongst Australian youth. 32 participants, aged between 16 and 24 years, took part in focus group discussions. Thematic data analysis focussed on identifying the psychological benefits arising from mobile phone use and whether mobile phone addiction was occurring amongst this group. Mobile phone use was believed to provide numerous benefits to users and is an intrinsic part of most young people’s lives. It emerged that some young people are extremely attached to their mobile phone with symptoms of behavioural addiction revealed in participants’ descriptions of their mobile phone use. The study provides a solid foundation for further work investigating addictive patterns of mobile phone use amongst youth.
4.3 Introduction

Similar to other industrialised nations, Australians have widely adopted mobile phone technology with over 80% of the population owning and using a mobile phone (Allen Consulting Group, 2005). It is within the youth cohort, however, that mobile phone use is at the highest with over 93% of Australian youth, aged 16 to 24 years, using a mobile phone (Galaxy Research, 2004). Whilst the majority of youth engage in appropriate use, some young Australians report regularly using their phone at high levels (over 25 times a day) and at inappropriate times (for example, in cinemas and when driving; see Walsh and White, 2006).

The popularity of mobile phones amongst youth is due, in part, to psychological benefits arising from use. Use of a mobile phone increases social inclusion and connectedness (Mathews, 2004; Wei & Lo, 2006) amongst a cohort in which friends and peers are highly influential (Smetana et al., 2006). Personalisation of mobile phones by ring-tones and screensavers can reflect an individual’s self-identity (Srivastava, 2005) and some young users believe that using a technologically advanced mobile phone improves their status amongst peers (Ozcan & Kocak, 2003). Young females, in particular, report that having mobile phone imparts feelings of safety and security, especially when they are alone at night, as they are able to quickly contact others should an emergency arise (Carroll et al., 2002). Thus, mobile phones provide a sense of reassurance for some users. In addition to benefits resulting from mobile phone use, however, problematic outcomes have been noted.

High levels of debt from excessive mobile phone use (e.g., Griffiths & Renwick, 2003) has led some young people to steal to pay their phone bill (Netsafe, 2005).
Classrooms (Selwyn, 2003) and social environments (ACNeilsen, 2004) are disrupted when mobile phones are used at inappropriate times and mobile phone use when driving leads to an increased accident risk (e.g., Haigney & Westerman, 2001; McEvoy et al., 2005). Younger drivers are more likely, than any other age group, to use a mobile phone when driving (Glendon & Sutton, 2005), presenting a significant safety risk in a cohort who are over-represented in crash statistics (Catchpole, Cairney, & Macdonald, 1994). Recent research has linked problematic mobile phone use (such as when driving) with addictive behaviour (Bianchi & Phillips, 2005; James & Drennan, 2005).

Additionally, Cassidy (2006) argues that there are similarities between young people’s mobile phone use and addictive behaviour (specifically, smoking). Using a social identity framework (Turner, 1991) Cassidy’s work reveals that youth associate mobile phone users with a number of positive attributes (such as successful and popular) previously associated with smokers. Young people may engage in the activity so that they are associated with the perceived positive attributes subsequently enhancing their membership in the social group. Positive peer approval is valued by youth, and, as such, mobile phone use may fulfil some of the functions previously provided by smoking (such as social approval). Cassidy concludes that mobile phone use amongst youth may potentially comprise a positive, rather than a negative addiction, in which benefits outweigh the costs of the behaviour (Glasser, 1985).

Youth are highly responsive to social pressures to engage in addictive behaviours (Orford, 2001) and social identification has previously been linked with young people’s commencement and continued performance of addictive behaviours including drinking (Johnston & White, 2004) and gambling (Delfrabbro & Thrupp,
Addictive behaviours are characterised by excessive performance of an activity with continued performance in spite of negative outcomes (Orford, 2001). As youth engage in the highest level of mobile phone use (Galaxy Research, 2004) and problematic mobile phone use is most prevalent amongst younger users (Bianchi & Phillips, 2005), it can be argued that mobile phone addiction is most likely to occur amongst this cohort.

Diagnosis of addictive behaviour, however, can be problematic as symptoms may vary according to the behaviour in question (Lemon, 2002; Orford, 2001). Thus, Lemon (2002) advises that a thorough investigation be conducted to determine symptoms specific to the behaviour. As such, this study explores the potential indicators of mobile phone addiction amongst Australian youth. The study uses Brown’s (1993, 1997) addiction criteria as the framework for investigating addiction indicators. Results from the study will build upon the previous research signalling the emergence of a new form of behavioural addiction. Additionally, results will provide a solid foundation for developing a targeted investigation of mobile phone addiction using the specific indicators identified in this study.

4.3.1 Addiction Indicators

Technological addictions, or non-substance addictions involving excessive human-machine interactions, develop when people become reliant on the device to provide psychological benefits, such as, an expected reduction in negative mood states or an expected increase in positive outcomes (Griffiths, 1999; Shaffer, 1996). As individuals use the device more often to obtain pleasurable outcomes excessive use leads to addiction (J. P. Charlton, 2002; Orford, 2001). In contrast to substance-related
addictions, technological addictions may not produce observable signs or symptoms (such as physiological indications of cravings) and the addicted individual may appear to be behaving in a normal and socially acceptable manner (Griffiths, 1996; Lemon, 2002) making diagnosis problematic. One framework used to investigate technological addictions are criteria developed from Brown’s (1993, 1997) components of behavioural addiction.

Originally applied to pathological gambling (Brown, 1993) and offending (Brown, 1997), Brown’s criteria have measured technological addictions such as computer addiction (Griffiths & Hunt, 1998); internet addiction (J. P. Charlton, 2002) and addiction to online game playing (J. P. Charlton, 2005). Similar to the Diagnostic and Statistical Manual of Mental Disorders (4th edition, text revision; DSM-IV TR), substance dependence criteria (APA, 2000) symptoms such as salience; conflict; euphoria; tolerance; withdrawal; and relapse and reinstatement (see Table 4.1 for definitions) are symptomatic of behavioural addictions (Brown, 1993). Brown’s criteria, however, emphasise the psychological and behavioural symptoms of addiction rather than physiological symptoms which may be present in substance-related disorders.
Table 4.1


<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
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<tbody>
<tr>
<td>Salience – cognitive and</td>
<td>The activity dominates the person’s thoughts and behaviour.</td>
</tr>
<tr>
<td>behavioral</td>
<td></td>
</tr>
<tr>
<td>Conflict – interpersonal and</td>
<td>Performance of the activity leads to conflict with other people and other aspects of the person’s life.</td>
</tr>
<tr>
<td>with other activities</td>
<td></td>
</tr>
<tr>
<td>Relief or euphoria</td>
<td>Doing the activity produces a buzz or thrill.</td>
</tr>
<tr>
<td>Loss of control</td>
<td>Inability to limit time given to behaviour</td>
</tr>
<tr>
<td>Tolerance</td>
<td>The activity needs to be engaged in a greater extent to experience positive feelings.</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>Negative feeling states arise when the person is unable to perform the activity.</td>
</tr>
<tr>
<td>Relapse and reinstatement</td>
<td>The activity is resumed at the same level following attempts to reduce it.</td>
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</tbody>
</table>

It is yet to be determined whether all of Brown’s (1993, 1997) criteria apply to technological addictions as some users of technology may engage in excessive or over-use without displaying addictive tendencies (J. P. Charlton & Danforth, 2004). Although symptoms of addictive behaviours may vary according to the behaviour in question (Lemon, 2002; Orford, 2001), the most defining feature is over-attachment to an object or behaviour with the behaviour continuing in spite of noted negative outcomes (Nakken, 1996; Orford). The prevalence of mobile phone use amongst Australian youth (Galaxy Research, 2004), the continued use of mobile phones in spite of problematic
outcomes (Bianchi & Phillips, 2005), and the emerging theme of potential mobile phone addiction (Cassidy, 2006; James & Drennan, 2005), provides a basis on which to explore the degree to which Australian youth are showing symptoms of behavioural addiction.

Overall, there is little psychological research investigating mobile phone use amongst youth, particularly in Australia, with previous research generally comprising quantitative studies (e.g., Bianchi & Phillips, 2005; Mathews, 2004; Walsh & White, 2006). Whilst quantitative studies provide useful broad-scale information regarding behaviour, they do not allow for an in-depth exploration of people’s behavioural influences (Mitchell, 2004). In contrast, a major advantage of a qualitative approach is the ability to understand the experiences of the people who engage in the behaviour of interest (Elliott, Fischer, & Rennie, 1999). By listening to participants and checking with them that their perspectives are correctly understood throughout the data collection process (member checking, Murphy & Dingwall, 2003), qualitative studies provide a unique insight into people’s lives. Thus, this study uses focus group discussions as a qualitative approach to obtain a rich description of young people’s mobile phone use (Strauss & Corbin, 1998). Using Brown’s (1993, 1997) behavioural addiction criteria as the foundation for this exploratory research into mobile phone addiction is believed to strengthen the theoretical framework of the study.
4.4 Method

4.4.1 Design

The study was qualitative investigation of young people’s perceptions of mobile phone use in their lives. Focus group discussions were utilised as the data collection method.

4.4.2 Participants

Thirty-two participants (13 males and 19 females), aged between 16 and 24 years ($M = 19.59, SD = 2.37$) were recruited by a snowballing method. An email explaining the study was composed and forwarded to contacts of the researcher who subsequently forwarded the email to their networks. Participants were entered into a prize draw to win a shopping voucher. The final focus group, conducted to confirm emerging themes and verify that saturation had been reached comprised first year psychology students who received partial course credit. Six focus group sessions ranging from three to seven participants were conducted. Four groups were mixed gender and the two remaining groups comprised females or males only. It is acknowledged that different participation incentives and group composition may have impacted on results; however, the incentives were not emphasised during recruitment and the same procedure was used for each group providing a similar experience across the groups. Consistent with our belief that incentives and composition did not influence results, data analysis revealed similar themes emerged in the discussions irrespective of differences in group composition or incentives.

Participants were required to use their mobile phone at least once per day. The application of this minimal inclusion criterion resulted in a range of mobile phone
owners being included. Participants used their phones between once to more than 25 times per day and length of ownership varied from 2 months to 8 years indicating a good spread of experience. Additionally, participants’ occupations varied widely with full-time students, trade and office workers, and high level white collar workers being represented. Thus, it appears that the participants in the focus groups, whilst not representative of the whole population of Australian youth, represented a cross-section of young Australian mobile phone owners.

4.4.3 Materials

A focus group discussion guide was developed prior to the commencement of the groups. The discussion guide contained a series of discussion points and suggested questions which began with more general mobile phone use questions, (e.g., “What do you mainly use your mobile phone for?”) to more specific situational questions (e.g., “I’d like you to think of a situation where you are asked to turn your mobile phone off. What do you do with your phone in those situations?”) The final set of questions related to problems arising from use (e.g., “Have you experienced any problems from using your mobile phone? If so, can you explain what happened?”) and addictive use (e.g., “Thinking about addiction, do you think that there is a potential for people to become addicted to their phones? If so, what would be happening that would indicate its occurrence?”). The discussion was allowed to move beyond the specific topic raised in the focussing question to allow new concepts and themes to emerge.

4.4.4 Procedure

The researcher moderated the focus group sessions which lasted approximately 1 hour. Each focus group was audio-recorded. Ethical procedures (e.g., written consent,
freedom to withdraw at any time, de-identification during transcription) were followed at all times as specified by the Queensland University of Technology Human Research Ethics Committee guidelines (project number 600000319).

Participants were invited to discuss each focussing question amongst themselves and to be open and honest as there were no right or wrong answers to the questions. The moderator probed for clarification if required and used validation comments (e.g., “thank you for that comment”) throughout the discussions. At the conclusion of discussion on each question, member checking (Murphy & Dingwall, 2003) was conducted. Participants’ general comments and a summary of the discussion were stated. This process ensured that the researcher understood participants’ perspectives and allowed participants to clarify or confirm any ambiguous points. Additionally, this strategy enabled participants to understand what the researcher had interpreted from the conversation so that their views were respected (Murphy & Dingwall).

Following the conclusion of each focus group, the researcher noted any questions which lacked clarity or resulted in new themes being uncovered. As a result of this process, questions were refined over the duration of the focus groups. Data collection ceased once no new themes emerged, indicating theoretical saturation had been reached (Morgan, 1998).

4.4.5 Data Analysis

At the conclusion of each session, the researcher transcribed the audio-tape discussions verbatim. Throughout the transcription process, the researcher noted concepts which were repeated across the groups, allowing for the identification of common concepts. Once transcription was completed, thematic analysis was conducted
using a qualitative software analysis program (NVivo) (QSR, 2002). First, data were coded into the broad categories of each focussing question. Each category was then analysed for evidence of the general concepts which the researcher had noted throughout the discussion and transcription process. Common concepts, which emerged in the focussing questions across the focus groups, were identified as themes. Finally, the discussions were analysed for symptoms of addictive behaviour as described in Brown’s (1993, 1997) addiction criteria.

An iterative process was used in which transcripts were coded and re-coded until no new themes or addiction symptoms emerged. Additionally, commonalities and differences amongst participants’ views were noted so that confirming and dis-confirming data were categorised (Miles & Huberman, 1994). By checking previous coding throughout analysis and developing themes from common data, it is believed that a thorough analysis was conducted and the data comprehensively and accurately represent participants’ perspectives.

4.5 Results

The results section first describes themes that emerged in relation to young people’s general mobile phone use. Both advantages and disadvantages of mobile phone use emerged. Second, participants’ understanding of potential mobile phone addiction is explored. Finally, the results of exploring participants’ discussions of their mobile phone use for symptoms of Brown’s (1997) behavioural addiction criteria are reported. Major themes for each section are described in Table 4.2.
Table 4.2

Emergent Themes in Participants’ Discussions of Mobile Phone Use

<table>
<thead>
<tr>
<th>General mobile phone use</th>
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<tbody>
<tr>
<td>Multiple functions</td>
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<tr>
<td>Use in emergency situations</td>
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<tr>
<td>Convenience</td>
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<tr>
<td>Over-attachment</td>
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Participants’ perspectives on mobile phone addiction

<table>
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<tr>
<th>Potentially addictive</th>
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<tbody>
<tr>
<td>Excessive behaviour (e.g., compulsive checking)</td>
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<tr>
<td>Addiction to being in contact with others</td>
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</table>

Most frequently mentioned addiction symptoms in participants’ discussions

<table>
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<tr>
<th>Salience</th>
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<tbody>
<tr>
<td>Conflict with other activities</td>
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<tr>
<td>Withdrawal</td>
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4.5.1 General Mobile Phone Use

Apart from being a communication tool, the mobile phone offers the advantage of performing many other functions in participants’ lives. During the discussions it emerged that mobile phones have replaced many traditional devices, such as alarm clocks, cameras, diaries and phone books. For example:

I do use my alarm clock and I set a lot of reminders. I don’t like using a diary, cause I keep forgetting to look at it. (Female, 18).
…now that I’ve got my phone it’s great having the digital camera on it … Handy. But, yeah, mostly the alarm clock and things like that. Oh and the calendar, I put birthdays in. (Female, 22).

…I don’t have a diary or anything like that so I use it for keeping everyone’s phone numbers. (Male, 22).

It emerged that there were disadvantages to relying on the mobile phone. For instance, participants consistently mentioned that if they lost their phone they would be unable to contact others as demonstrated in the following quote:

I couldn’t contact 90% of my friends or family without it. I don’t have anyone’s numbers, that’s my phone book. (Female, 18).

Females, in particular, identified that having a mobile phone provided them with feelings of increased safety. Participants described times the phone had been used in emergency situations and discussed how they felt reassured because they would be able to use their mobile phone to contact others if an emergency arose. Statements illustrating this concept are:

It’s a security blanket… it makes you feel much safer. (Female, 16).

…if you’re driving and you break down, I’m more confident having a mobile on me, rather than if it was night sitting in the dark or having to find a payphone. (Female, 22).

The most commonly identified benefit of using a mobile phone was convenience due to ease of contact. Participants regularly discussed the benefits of being able to contact others, or to be contacted by others, irrespective of time and location as shown in the following examples:
The convenience factor again. When you’re in the middle of nowhere in the middle of the night and you’ve got to call a taxi that sort of thing. (Male, 22).

… because I’m at uni and stuff … I can call or someone can contact me pretty much any time… it can be during the day, during the night or the weekends. (Female, 18).

The above comment, however, raises an interesting issue. Whilst participants identified it was very important to be readily contactable, they also commented that this was a disadvantage as contact can occur at inappropriate times. For example,

I’ll read it in the cinema cause I don’t want to sit through the movie and then find out that I was you know I was supposed to be somewhere or my parents needed me or something like that. (Female, 18).

…it gets you pretty annoyed when people ring you when you’re having a good dream or whatever and they wake you up. (Female, 20).

Overall, though, participants indicated that the positive benefits provided by mobile phones outweighed the negatives resulting in the mobile phone being an integral part of young people’s lives, so much that they could not imagine being without it. The following quotes illustrate the value of the mobile phone to young people:

I think it really becomes a part of you because it’s with you more than anything else in the world…like I feel naked without my phone. (Female, 16).

It’s like an appendage… you’re never without it. (Male, 20).

Given that addiction is defined as being over-attachment to an object or behaviour (Orford, 2001), the previous comments illustrating the level of attachment
some people have to their mobile phones suggest that some young mobile phone users may be tending towards addictive behaviour.

4.5.2 Addiction Symptoms

Addiction symptoms were analysed by two methods. First, as part of the discussions, participants were asked if they believed addiction could occur and, if so, what would be happening that would indicate its occurrence. These responses were coded as participants’ perspectives on addiction were it to be a phenomenon and were analysed separately to the remaining data. Second, once the participants’ views of addiction as a potential phenomenon were removed from analysis, the remainder of the discussions were analysed for symptoms of addiction amongst participants’ general discussions of their own general mobile phone use using the theoretical framework of Brown’s (1993, 1997) addiction criteria.

4.5.2.1 Participant’s Perspectives on Addiction

The majority of participants expressed a view that mobile phone addiction could occur:

I think a lot of people are addicted to their phone. (Female, 17).

… everything’s so technologically advanced. It could happen quite easily I think. (Female, 18).

In contrast, some participants expressed a view that it was not possible to be addicted to technological advice, for instance:

It’s just a tool, an aid to everyday life. (Male, 22).

When asked for how addiction would be evidenced, participants were quick to respond with examples of excessive use:
I guess to identify it, people who are getting into financial trouble as a result of it. If you’re using it that much that it’s going to be costing you more than you can afford. (Male, 24).

I think it could be also, you know, that if they heard a ring, they have to answer it. (Female, 18).

… always having it in their hand, checking it regularly. (Male, 20).

I think just over-using it, like to call people that don’t want to hear from them or something or just calling for no reason. (Female, 16).

There was much discussion amongst participants regarding whether people were addicted to the mobile phone or to the benefits using a phone provided. This concept is illustrated in the following quotes:

… after you get over the euphoria of having a phone, like a cool phone, then after that it’s just the contacting that you get addicted to. (Male, 19).

It’s not like when people quit smoking and they always need to have something in their hand. It’s not like that. Like people addicted to texting, it’s like being able to talk to somebody else who could be ages away, just in a second. (Male, 17).

Some participants considered the potential for mobile phone addiction, as follows:

Like it’s not cigarettes or ecstasy or anything so what harm can it be? … I just think there are worse things... (Female, 19).

Whilst the above approach revealed that participants believed addiction could occur and identified behavioural symptoms, such as compulsive checking, it did not
reveal whether addictive tendencies were indicated amongst the focus group participants. Thus, the second approach to investigating addiction symptoms was to analyse the conversations for evidence of Brown’s (1997) behavioural addiction criteria.

4.5.3 Indicators of Addiction in Participant’s Discussions

4.5.3.1 Salience

Cognitive salience, in which the mobile phone overrides other thought processes (Brown, 1997), is illustrated in the following quotes in which participants mention how they think about their mobile phone when trying to focus on other activities:

I get distracted so, that’s when I have it on me, so it’s not too good … I’m trying to focus on the lecture but my phone’s my distraction. (Female, 22).

Normally I just want to find out who messaged me, like, and then I can’t really concentrate on the lecture unless I text back. (Male, 20).

In addition to the mobile phone dominating thoughts at certain times, there was also evidence of behavioural salience. One participant described how he would not go on holidays to places where he had no mobile phone reception as using his phone was so important to him. Behavioural salience was primarily revealed as regularly using or checking their phone throughout daily activities, as follows:

Personally, I’m addicted to checking if I have a phone call or text. If I walk past it, I have to check it ..always. (Female, 19).

I wake up and check my phone straight away … I’ll have a shower, then I’ll come back and I’ll check the phone. (Female, 16).

The previous comment led another participant in the same focus group to comment:

Well, I take mine in the shower. (Female, 16).
4.5.3.2 Conflict with Other Activities

As illustrated in the above comment behavioural salience can lead to a conflict with other activities (Brown, 1997). Throughout the focus groups, participants consistently described how their mobile phone use interfered with other activities, such as work, driving, and social activities, as demonstrated in the following quotes:

I always check my phone at work to see if anyone’s messaged me. (Female, 17).
I don’t have a handsfree so but every now and again if someone SMSs me and I’m in the car I’ll just quickly tap something out. (Male, 22).
… if it like, calls or something, and you’re in the movies or in the middle of a class and your phone rings … I get embarrassed. (Female, 16).

In contrast to behavioural salience, interpersonal conflict was not highly evident as participants did not report that their mobile phone use led to conflict with other people.

4.5.3.3 Euphoria or Relief

According to Brown (1997), the concept of euphoria relates to a feeling of short term pleasure from engaging in the behaviour. Examples included:

…with messages and when you get something you’re like something’s there, someone wants to talk to me, and you just feel anxious or excited or whatever and you want to actually pick it up or answer it. (Female, 19).
I get excited like say if I have one message received I’m like, yeah, sweet, check it. If there’s like 2 or 3 messages I’m like, YES, who’s it from kind of thing, like I get excited because I’ve got a lot of messages. (Female, 17).
Most commonly, however, euphoria related to feeling valued or loved when calls and messages were received as illustrated in the following quotes:

… you feel loved. It’s just so random. You get happy that you know that someone’s thinking about you… (Female, 18).

It makes you feel pretty popular if on a Friday night you get like 5 or 6 calls in 20 minutes or something like that so, like, you feel good. (Male, 20).

4.5.3.4 Loss of Control or Tolerance

In contrast to the traditional concept of tolerance which involves engaging in the behaviour at increasingly higher levels to attain euphoria (Brown, 1997), it appears that excessive mobile phone use is related to a loss of control over how much the phone is used. Some participants reported that they were surprised at their level of use which was reflected in high bills or running out of credit, for example:

I tell myself I don’t call anyone but my bill always comes with a 40 dollar part of just calls, … I don’t even know when I do it. (Female, 17).

I get too wrapped up in it and forget about the time. (Female, 19).

An exception to losing control was revealed by a few participants who reported that they monitored their use to remain within the budget they had allocated for their mobile phone use, for example:

I’m conscious that, you know, it’s obviously up to the limit so I try not to go past it. (Female, 24).

4.5.3.5 Withdrawal

Withdrawal refers to experiencing unpleasant feelings when unable to engage in the behaviour (Brown, 1997). In discussions about how participants felt at times when
they had not been contacted on their phone or if they were unable to use their phone, some level of personal distress was noted. For instance:

If no-one has contacted me I get really depressed and I’m like oh no-one loves me. (Female, 17).

I feel, like, mainly anxious with my phone when it doesn’t work. (Female, 16).

Rather than anxiety or depression, a stronger theme that emerged was feeling disconnected from other people when unable to use their phone:

Well for like 4 hours without it, huh, I thought I was going to miss out on everything and have trouble getting in contact with everyone. Yeah, I felt I was going to miss out on everything, lost, a bit like that. (Female, 19).

You feel cut off because you need someone …you need to be able to have that connection. (Female, 18).

… it’s that thought that someone might be contacting you and I don’t want to miss it. (Male, 20).

During the discussions, participants were asked how they would feel if they were told they would be unable to use their phone for the next 3 days. The majority of participants stated that they would resist any attempts to prevent them from using their phone, as follows:

I’d put up a fight. (Female, 17).

No way I’m going without it. (Male, 20).

If the situation did occur, however, most participants reported that they would feel distressed:

I’d be so angry at myself. I couldn’t do without it. (Female, 17).
In contrast, some participants reported that they would utilise alternative communication channels, such as email, or landlines. An interesting revelation was that most participants took preventative measures to ensure that they were not without their mobile phone (such as always having a battery re-charger with them), subsequently limiting the potential for withdrawal to occur.

4.5.3.6 Relapse and Reinstatement

Relapse and reinstatement is indicated when people unsuccessfully attempt to cut down on the behaviour, subsequently engaging in similar or higher levels than previously (Brown, 1997). Throughout the conversations, there was little mention of attempting to reduce mobile phone use. The exception was one participant who had been in financial trouble for excessive mobile phone use. She describes her attempt to reduce her phone bill in the following quote:

…when I had my big bills, the only time I tried to cut down was when I finished (my contract) and I well, I tried, I think for years and they didn’t get that much lower. (Female, 22).

4.6 Discussion

This study aimed to explore the role of mobile phone use in young people’s lives and whether mobile phone addiction is indicated in this cohort. Results revealed that, in general, mobile phone use plays an integral part in the lives of young Australians and has become more than a tool for communication. The mobile phone has replaced some traditional devices, such as cameras and diaries, for some users, with some young people reporting they were so attached to their phone that they felt the mobile phone was a part of them. Given the integration of mobile phone use into young people’s lives and the
number of functions that mobile phone use provides (e.g. use of tools and ease of contact), it is not surprising that some young people are extremely attached to their mobile phone.

As over-attachment to a behaviour or object is considered to be a defining feature of addictive behaviour (Orford, 2001), participants were asked whether they believed mobile phone addiction could occur. There was general consensus that mobile phone addiction could occur and participants identified that behaviours, such as compulsive checking and inappropriate use, may be symptomatic of addictive use. It was interesting that some participants rationalised that mobile phone addiction, if it were to occur, would not be as harmful as negative addictions such as smoking or drug use.

To further identify whether mobile phone addiction is occurring, discussions were analysed for signs of Brown’s (1993, 1997) behavioural addiction criteria amongst participants’ descriptions of their general mobile phone use. Symptoms of behavioural and cognitive salience, conflict with other activities, euphoria, tolerance, withdrawal and relapse and re-instatement emerged at varying levels amongst participants’ descriptions of their mobile phone use. Throughout the discussions, salience was indicated when participants discussed thinking about the phone when not using it (cognitive salience) and regularly checking the phone (behavioural salience). The high salience of mobile phone use was linked to conflict with other activities as participants reported thinking about messages in lectures and using the phone in cinemas. It must be noted, however, that some young people indicated they turned their phone off at times when it would be considered inappropriate to use it. It may be that conflict with other activities differentiates people who are addicted from those who are not. For instance, people who
are addicted to their mobile phone may be unable to resist using the phone in situations where it is inappropriate whilst people who not addicted may be able to control their mobile phone use when required. Charlton and Danforth (2004) argue that addictive behaviour differs from excessive behaviour. Future research, then, could attempt to identify the specific symptoms that differentiate addictive and non-addictive mobile phone use.

There appear to be some differences between traditional addictive symptoms and potential symptoms of mobile phone addiction. In contrast to traditional addiction research in which euphoria is generally associated with a feeling of excitement at the prospect of engaging in the behaviour (Brown, 1997), euphoria from mobile phone use appears to be related to feeling valued or loved when calls or messages are received. Participants discussed the positive feelings that arose from being contacted on their phone. Thus, it may be that, rather than euphoria leading people to make calls or send messages, it is a response to others’ behaviour. Additionally, tolerance was indicated when some young people reported losing track of how much they use their phone rather than needing to engage in the behaviour at higher levels to attain euphoria (Brown, 1997).

Whereas withdrawal generally comprises physiological or psychological distress (APA, 2000) when unable to engage in the behaviour, severe distress did not emerge in participants’ conversations about times they were unable to use their phone. Rather than feeling distressed, most participants reported feeling disconnected from others. Thus, it appears that it is the lack of contact with others that underpins feelings of withdrawal. It must be noted, however, that participants mentioned taking preventative measures (such
as making sure their phone is constantly charged) to reduce the potential for withdrawal to occur. During the discussions, there was only one instance of a participant identifying behaviour similar to relapse and reinstatement suggesting that this concept may need further exploration in future studies. Alternatively, it may be that participants were happy with their level of use and did not see a reason to reduce it, particularly those who reported monitoring their level of use to remain within budget.

One of the most interesting results in this study is the complexity of potential mobile phone addiction. Whilst symptoms of behavioural addiction were evidenced, a strong theme was that the mobile phone was a tool which facilitated young people’s connectedness to others. Thus, it may be, as Cassidy (2006) suggests, that mobile phone use is a positive addiction in which positive benefits are derived from the behaviour (Glasser, 1985). However, as Orford (2001) warns that positive addictions may develop into negative addictions when adverse consequences (such as withdrawal when unable to engage in the activity) over-ride the benefits of the behaviour, future research could attempt to delineate outcomes of positive versus negative mobile phone addiction.

Whilst this study provided important information regarding the intrinsic role of mobile phone use in young Australians lives, a number of limitations are evident. First, a previously developed model, Brown’s (1993, 1997) behavioural addiction criteria, formed the theoretical basis to examine whether mobile phone addiction was indicated amongst participants. The use of addiction criteria is limited in that it provides a classification of symptoms only without any explanatory basis for the factors influencing people’s tendency towards addiction. It is believed, however, that the initial identification of symptoms of mobile phone addiction in this study provide a foundation
for further research investigating the pre-cursors of mobile phone addiction in young people.

Additionally, although we believe Brown’s (1993, 1997) addiction criteria provided an appropriate framework to initially determine whether mobile addiction is indicated, analysis may have been limited to pre-determined symptoms. As symptoms of addictive behaviour vary according to the behaviour in question (Lemon, 2002; Orford, 2001), it is possible that additional symptoms, specific to mobile phone addiction, may have been overlooked. Thus, future research could adopt a grounded theory approach (see Strauss & Corbin, 1998) to uncover further themes relating to mobile phone addiction and to identify differences in addictive and non-addictive behaviour. Alternatively, drawing upon other relevant theoretical frameworks of addiction to understand the development of mobile phone addiction may prove useful.

Finally, the sample in this study was limited to mobile phone users. Although there was a wide range in experience and level of use, most participants identified they regularly used their phone. Inclusion of participants who do not use a phone or who rarely use their phone would allow for comparison of experiences. Thus, the characteristics of addictive versus not addictive mobile phone use may be more clearly identified. Decisions on whether a behaviour is addictive depend, in part, on understanding the benefits derived from the behaviour (Gaffney et al., 1998). Further exploration of psychological reasons for use may assist in identifying those people who are more or less likely to engage in addictive use.

In conclusion, this study provided an initial investigation into the role of mobile phone use in young Australians’ lives, a previously under-researched area. It was shown
that mobile phones have become an intrinsic part of the lifestyle Australian youth, with some young people demonstrating symptoms of addictive behaviour. The use of Brown’s addiction criteria (1993, 1997) as the theoretical framework of the study allowed for the identification of symptoms of mobile phone addiction amongst participants’ discussions of their mobile phone use. Results in this study provide a useful foundation to design further research investigating the impact of mobile phone technology on the lives and well-being of youth in Australia and elsewhere.
CHAPTER 5: THE PHONE CONNECTION: A QUALITATIVE EXPLORATION OF HOW BELONGINGNESS AND SOCIAL IDENTIFICATION RELATE TO MOBILE PHONE USE AMONGST AUSTRALIAN YOUTH

5.1 Notes

This paper is reproduced from:


The candidate is first author on this published paper and was responsible for all aspects of manuscript preparation including reviewing the literature, developing the rationale for the research, conducting the focus groups which formed the data collection method, transcribing and analysing the focus group data, interpreting the research findings, and writing the manuscript. The second and third authors are members of the candidate’s supervisory team and their contribution has been supervisory in nature. All co-authors provided permission for this paper to be included in this PhD dissertation.

The journal in which this paper has been published is peer reviewed international journal. The journal is listed in the Social Sciences Citation Index and is recognised for the HERDC. The 2007 Impact Factor for this journal is 0.909. The copyright conditions of the publisher allow for inclusion of the paper in this PhD dissertation.

The data collection instruments used in the study reported in this paper are contained in Appendix A.
5.2 Abstract

Mobile phone use is a prevalent behaviour amongst youth; however, there is little research to determine psychological influences on mobile phone use. This paper reports the results of a qualitative exploration into social psychological factors relating to young people’s mobile phone use. Focus groups were conducted with 32 participants, aged between 16 and 24 years. Three major themes, connectedness, belonging, and social identity, were explored in relation to young people’s mobile phone use. Easy contact with others when using a mobile phone facilitated connectedness between people. A need to remain connected emerged in participants’ descriptions of their mobile phone use. Consequently, data were analysed for factors underpinning people’s desire to be connected. It emerged that mobile phones were used to enhance feelings of belonging amongst youth. Additionally, group norms influenced mobile phone behaviour indicating that social identity processes are related to mobile phone use. Results in the study provide a foundation upon which to investigate further the relationship between mobile phone use and psychological factors impacting on young people’s social development.
5.3 Introduction

In Australia, youth, aged 16 – 24 years, are recognised as the most prolific users of mobile phones (e.g., Galaxy Research, 2004). As current youth are the first generation to have grown up with mobile technology, they have incorporated the device into their lives. Although the disadvantages of mobile phone use include cost and contact at inappropriate times (Walsh & White, 2006), it is the psychological and practical benefits of technologies which make users more likely to adopt them (Ruggiero, 2000). Use increases over time as the benefits become more valued by the user (Ruggiero). There are many acknowledged practical benefits from mobile phone use, including convenience and ease of contact; use in emergency situations; organisation of transport; and alleviating the need to locate public telephones (Leung & Wei, 2000; Ling, 2004; Ozcan & Kocak, 2003; Walsh & White, 2006). Specific psychological factors impacting on mobile phone use, however, are less understood.

Mobile phone use has been found to facilitate social inclusion and, thus, it would be expected that socially disadvantaged people may use a mobile phone to improve their connectedness to others (Wei & Lo, 2006). When testing this hypothesis, however, Wei and Lo found that Taiwanese mobile phone users who were shy and lonely used their phone at low levels whilst those who used their phone for social motives, such as expressing affection (e.g., letting others know you care for them) and social utility (e.g., relieving boredom), had higher levels of mobile phone use. Although there may be cross-cultural differences between the participants in Wei and Lo’s study (Taiwanese) and the present research (Australians), their findings suggest that it is extrinsic, rather than intrinsic, factors which influence mobile phone use. Previous research, in Australia
and overseas, has found that one of the primary benefits of using a mobile phone is ease of contact with social networks (e.g., Mathews, 2004; Srivastava, 2005; Walsh & White, 2006). As social networks are particularly important for youth who are moving beyond the confines of family and school to form new relationships and social communities (Arnett, 2004; Smetana et al., 2006), it may be that social psychological influences are associated with mobile phone use amongst youth.

Two social psychological factors which enhance psychological well-being and development are belongingness (Baumeister & Leary, 1995) and social identification (Hogg & Abrams, 1988). This paper reports a qualitative exploration of how belongingness and social identity may relate to mobile phone use amongst youth. Use of a qualitative method allowed young people to express their thoughts and feelings regarding mobile phone use, subsequently providing their unique perspective on the relationship between mobile phone use and their social development. The combination of a qualitative research methodology and a social psychological framework to investigate mobile phone use amongst youth may serve to improve our understanding of social psychological factors influencing this behaviour.

5.3.1 Belongingness

Along with understanding, controlling, enhancing self, and trusting, belonging is posited to be one of the five core social motivations that underpins much social behaviour (Fiske, 2004). The belongingness hypothesis states that humans have a fundamental need to form strong stable relationships (Baumeister & Leary, 1995). As such, people are motivated to seek out frequent personal contacts and cultivate relationships which promote the formation and maintenance of social bonds. Feelings of
connectedness and value to others arising from belonging increase self-esteem and enhance overall psychological adjustment. Low levels of belonging, however, result in poor mental well-being and low self-esteem. As such, behaviours which promote feelings of belonging are highly valued (Baumeister & Leary).

Indications that the need to belong may be related to mobile phone use have emerged in recent studies. First, people with low self-esteem have been found to engage in excessive text messaging, possibly to feel part of a positive social group (Bianchi & Phillips, 2005). Second, exclusion from SMS conversations has resulted in lowered levels of belonging and self-esteem, with ostracised participants feeling angry about their non-inclusion in the SMS conversation (A. Smith & Williams, 2004). Additionally, young people who do not have a mobile phone report feeling excluded from friendship groups and social networks (T. Charlton et al., 2002; Mathews, 2004).

Previous research into people’s use of communication technologies has revealed that people use these devices to initiate and maintain relationships. For instance, text messaging is used by young people for flirting and making initial contact with prospective relationship partners, as a message is viewed as less confrontational and threatening than face-to-face contact (Ben-Ze'ev, 2005). Additionally, electronic friendships, such as those formed by computer game players (Colwell, Grady, & Rhaiti, 1995), and on-line romantic relationships (Ben-Ze'ev) are valued by young people. Electronic relationships often supplement, rather than replace, traditional face to face friendships (Colwell et al.) providing an additional avenue of social connection for users of the technologies. Mobile phone use has been found to facilitate the formation and maintenance of both romantic (Ben-Ze'ev) and social relationships (Ling, 2004;
Srivastava, 2005). Thus, the need to belong may motivate young people to use their mobile phone. Additionally, young people report that a primary benefit of mobile phone use is contact with friendship groups (Mathews, 2004), indicating that social identification is linked to mobile phone use amongst this cohort.

5.3.2 Social Identity

Social identity theory is a general theory of group processes that has been drawn on to explain a range of phenomena including intergroup relations and intra-group behaviour (Hogg & Abrams, 1988; Turner, 1999). Within a social identity theory paradigm, the self is socially constructed with group memberships and the salience of shared intra-group characteristics influencing the individual’s self-concept. In-group members are viewed more favourably than out-group members and people are motivated to act in a manner congruent with their chosen in-group to receive approval from group members. As such, perceived group norms become the reference point for beliefs, attitudes and behaviours as individuals seek to behave in a manner consistent with the relevant social group (Hogg & Abrams, Turner).

Whilst social identification is most effective under conditions when the group is present, the formation of a psychological sense of community, in which group members are linked by a psychological attachment (Obst & White, 2005), results in social identity being a significant behavioural influence when people are apart from the group (Ellemers et al., 2002). Internalisation of group norms from salient group memberships are most impactful on behaviour (White et al., 2002). Thus, members will feel motivated to engage in normative behaviours irrespective of whether the group is present or not.
The relationship between social identity influences and mobile phone use, however, remains unclear. Whilst prototypical images of mobile phone users have been found to influence young people’s mobile phone use (Cassidy, 2006; Walsh & White, 2007), the role of group-based normative pressures on mobile phone use has not been investigated. Given the high level of mobile phone use amongst youth in Australia and other nations (e.g., Green, 2003; Ling, 2004; Srivastava, 2005; Walsh & White, 2006), mobile phone use is arguably an intrinsic behaviour in young people’s friendship groups. Additionally, previous research has shown that young people most commonly contact friends, rather than family or other groups, on their phones (Baron & Ling, 2007; Mathews, 2004) indicating that social identification processes are likely to be related to young people’s mobile phone use.

5.4 The Current Research

In spite of the prevalence of mobile phone use amongst youth, there remains little psychological research that examines mobile phone use amongst this cohort. The majority of previous research has been conducted from a communication (e.g., Leung & Wei, 2000; Ozcan & Kocak, 2003) or sociological (e.g., Ling, 2000; Srivastava, 2005) perspective. Whilst these studies have provided important information about the reasons for adoption of the technology or the social implications of mobile phone use, they do not allow for understanding of psychological factors underpinning mobile phone use. Most of the research available in the psychological context are quantitative studies (e.g., Bianchi & Phillips, 2005; Mathews, 2004; Walsh & White, 2006). Whilst quantitative methods provide a broad-scale understanding of specific factors predicting a behaviour, quantitative research, in general, does not provide an enriched insight into how people
understand their behaviour (Mitchell, 2004). In contrast, qualitative methods allow people’s perspectives on the behaviour to be explored subsequently enhancing interpretation of behavioural influences (Strauss & Corbin, 1998).

In the present study, focus groups are used as the data collection method. Additionally, the study adopts an a priori analysis which seeks to identify themes on the basis of established theory. Whilst there are alternative qualitative methods available, there are a number of reasons to support the use of our approach. First, although mobile phone use is a commonly performed behaviour, there is limited research investigating the psychological factors associated with this behaviour. Focus groups are a useful method to gain an in-depth exploration of a topic by allowing shared views to become apparent (Fern, 2001). In contrast to individual interviews in which people’s ideas may be restricted, focus groups provide a socially interactive environment which facilitates a broader discussion of the topic (Greenbaum, 2000).

Additionally, focus groups allow for exploration of hypothesised links between established theories and new behaviours prior to developing larger scale studies (Fern, 2001). The present research sought to explore whether current theories are applicable to a new behaviour. It is hoped that the findings will provide the foundation for future discussion amongst researchers about which current theories can be utilised to best understand mobile phone use behaviour. Alternatively, it may be that new theoretical approaches are required.

As yet, few qualitative studies have explored psychological factors relating to mobile phone use. Thus, adoption of a qualitative approach, in this study, will give an initial insight into the psychological underpinnings of young mobile phone use amongst
some young Australians. Given that mobile phone use is a highly social behaviour, the current research adopts a social psychological approach to explore the perspective of a group of young Australians regarding their mobile phone use.

Youth engage in the highest level of mobile phone use and are at a life-stage in which they are actively developing new relationships and communities (Arnett, 2004; Smetana et al., 2006). Thus, they provide a unique cohort for investigating social psychological factors that influence behaviour. The information obtained during focus group discussions will improve our understanding of the interplay between social psychological factors and mobile phone use amongst Australian youth.

5.5 Method

5.5.1 Participants and Design

Six focus group sessions lasting approximately 1 hour each were conducted. Thirty-two participants (13 males, 19 females) aged between 16 and 25 years ($M = 19.59, SD = 2.37$) were recruited by a snowballing method. Family, friends, and work colleagues of the first author emailed a description of the study and a request for participants to their social networks. Participants’ occupations varied widely with students, hospitality workers, and professionals being included in the sample. The final focus group, conducted to confirm previous emerging themes and that theoretical saturation had been reached (Miles & Huberman, 1994), comprised first year psychology students.

Focus group size ranged from three to seven participants. Four groups were mixed gender, with the remaining two groups being females only or males only respectively. Groups were randomly constructed as participants chose which group to
attend. In some groups, pairs of friends attended with the remainder of the group being individual attendees. The exception to this was the female only group who were students attending the same school. The only inclusion criterion for the study was that participants owned and used a mobile phone at least once per day. Length of mobile phone ownership ranged from 2 months to 8 years and level of use ranged from once per day to over 25 times a day within various groups. A range of mobile phone owners were included in every group. Participants were told that all opinions would be respected and were encouraged to contribute to the conversation, irrespective of their current level of mobile phone use.

Participants were entered into a draw to win a shopping voucher, with the exception of the final group (university students) who received partial course credit. It is acknowledged that different participation incentives and group composition may have impacted on results; however, the incentives were not emphasised during recruitment and the same procedure was used for each group providing a similar experience across the groups. Consistent with our belief that incentives and composition did not influence results, data analysis revealed similar themes irrespective of group composition or differences in incentives.

5.5.2 Materials

A discussion guide comprising open-ended questions was developed prior to the commencement of the focus groups (Silverman, 2005). Discussion topics included level and type of mobile phone use (e.g., What do you primarily use your mobile phone for?); outcomes of mobile phone use (e.g., What are the main benefits of using a mobile phone?); and mobile phone use amongst friendship groups (e.g., How is the mobile
phone used amongst your friends?). During the data collection phase, questions were refined to allow for expansion on emerging concepts or to improve the moderators’ understanding of some points.

5.5.3 Procedure

Approval to conduct the research was obtained from the Queensland University of Technology Human Research Ethics Committee (Approval number 600000319). Prior to commencement of each group, participants were provided with an information sheet outlining the study, the voluntary nature of their participation, and procedures to protect anonymity (such as removal of any names from transcripts). Written consent was obtained to audio-record discussions from all participants and parents of minor participants signed consent for their child to participate. Participants were advised both verbally and in writing that, whilst their input was valued, they had the right to participate at their own level and that they could withdraw from the study at any stage without penalty. Participants were invited to be open and honest and were informed that there were no right or wrong answers.

The first author moderated the focus groups. Discussions were guided by focussing statements and semi-structured questions. Participants were encouraged to discuss each question amongst themselves with the moderator probing for clarification if required. To encourage contributions from participants, comments were validated by phrases such as, “thank you for that comment”. The discussion was allowed to move beyond the specific topic raised in the focussing question to allow new concepts and themes to emerge.
At the conclusion of discussion on each question, member checking was conducted (Murphy & Dingwall, 2003). The moderator re-stated participants’ general comments and provided a summary of the discussion. This process ensured that the moderator understood participants’ perspectives and allowed participants to clarify or confirm any ambiguous points. Additionally, use of this strategy gave participants the opportunity to understand the researcher’s interpretation of the conversation (Murphy & Dingwall).

5.5.4 Data Analysis

Audio-tapes were transcribed verbatim with the researcher noting common concepts across the groups. Following transcription, the first author used a qualitative data analysis program (NVivo) (QSR, 2002) to conduct thematic data analysis (Silverman, 2005). Data were initially coded into the broad categories of each focussing question. Each category was then analysed for evidence of the general concepts which the researcher had noted throughout the discussion and transcription process. Concepts which arose frequently across categories and group sessions were coded and identified as themes. An iterative process was used with transcripts being coded and re-coded until no new themes emerged. The second author (who was not present during the discussions) reviewed the de-identified transcripts and commented on the relevance of the quotes chosen to illustrate the themes in the study.

5.6 Results

Throughout the discussions, it emerged that the primary benefit of mobile phone use was connectedness to others. Whilst mobile phones were used for practical reasons such as organising transport; planning social activities; and being contactable
by employers; the word ‘connect’ was regularly used by participants when discussing their mobile phone use. For example:

It’s definitely the connecting. Like if you just had a mobile phone that had the address book and you didn’t connect, people would throw it away. (Male, 22).

The reason I like having my phone on me is so I can be connected to everyone. (Female, 20).

I use my phone to stay connected. If I haven’t seen someone … I’ll send them a message. (Male, 20).

It’s a good way to connect cause she’s really hopeless with mail and she doesn’t write letters or anything like that, so I never get anything else unless it’s on my phone. (Female, 22).

Thus, the ability to quickly and easily connect to family and friends was highly valued by participants. Additionally, the comments indicate it is not only physical connection but the knowledge that you are psychologically connected with others via your mobile phone which is important.

Many participants described how they using their phone to remain in contact with people who were separated by distance. Previously, keeping in contact by telephone with family or friends who lived interstate was relatively expensive. Using a mobile phone to send and receive text messages, however, was believed to provide an inexpensive method of overcoming geographical boundaries when communicating. In the following quote, one participant describes how her family
texts each other during televised football games, creating a shared experience even though they are separated by over 2000 kilometres:

We’ve got family in South Australia who go for the Crows or Port [Australian Football League teams] and when we’re playing them, we’re always giving each other a hard time, bit of banter and messages, because even though they’re two states away it’s nice … (Female, 22)

Other participants discussed how they used their mobile phone to share experiences, such as concerts or news, with people who were not physically present. For instance:

Last weekend, I was at a festival and my phone recorded some mini videos and I sent them to people I know who’d be interested (Male, 24).

I’ve sent photos, when I went to concerts, to friends and you know they’re missing out, and it’s like yep, I’m here, I’m now, this is great. (Female, 18).

It depends how good it was and how many people I want to tell. If I want to tell everyone, I’d just send a message to everyone. (Female, 20).

I had to tell a lot of people so I just messaged them because you can’t call them all. It also depends on who the person is, like if they’re like family, you’d call. (Female, 16).

These findings indicate that letting absent others know of current news and activities is a regular and accepted part of youth culture.

Additionally, participants reported that they felt reassured when they could quickly connect with others on their mobile phone:
It’s like having your friends on standby. (Male, 20).

…you’ve got friends out there…someone’s writing back. (Male, 22).

I think it’s also the instant reaction, like, if you message someone and you know a few seconds later you’ll get a message back it’s like, someone’s there talking to you, you are connected and they’re there if you need them. (Female, 18).

The ability to be always in contact with others offered by mobile phones influenced some young people’s decision to leave their phones on at all times:

It’s the anticipation that someone could (contact) you. You don’t necessarily expect it to happen but there’s the chance and you don’t want to miss out on it. (Male, 19).

You always want to be contactable. (Female, 17).

Throughout the analysis, data were analysed for exceptions to connectedness being a valued outcome of mobile phone use; however, no contradictory opinions were revealed. Overall, it was revealed that the mobile phone is a vital tool for facilitating physical and psychological connectedness amongst a cohort who are moving beyond the traditional confines of school and family life. Consequently, data were further analysed for factors underpinning participants’ need to remain connected to others.

5.6.1 Belongingness

Throughout the discussions, the need to belong emerged as an important factor influencing young people’s mobile phone use. To facilitate belonging, people seek out frequent contact with others to cultivate relationships (Baumeister & Leary, 1995). Youth, particularly, are maintaining current relationships whilst developing new relationships and expanding social networks (Arnett, 2004). Many participants described
how they frequently contacted people on their phone, as illustrated in the following quotes:

…when I’m bored sitting around at home on a Saturday night doing nothing, I’ll just SMS everybody I know. (Male, 22).

It might be just a stupid message, that doesn’t have any point to it it’s just to say I’m here. (Female, 17).

I’ll go through my phone book and see, oh I haven’t spoken to him for a while, I can talk to him for free. I’ll talk to him for 10 minutes just because I can, not even about anything. (Male, 20).

Whilst frequent contact, often for no particular reason, was a prevalent theme, a couple of participants indicated that they were more purposeful in their mobile phone use:

I use mine mainly for functional reasons. If I want to catch up and make plans or if I’m on my way to see someone and running late to let them know, that type of thing. (Male, 24).

An interesting concept that emerged during the discussion was whether personal relationship status impacted on the reasons for using a phone. For instance, participants who had a partner believed they were less likely to use their phone to frequently contact a wider social group than people who did not have a regular partner:

…because you become committed to one person, you either have a girlfriend or a partner or a wife, and you don’t seem to have as much contact outside of those relationships except for maybe three or four friends …(Male, 22).
As only three participants in this sample indicated they were in stable relationships, this concept was not explored further.

During the discussions, participants routinely mentioned how using a mobile phone allowed them to remain close to people they valued when they were physically apart, subsequently enhancing belongingness. This concept is illustrated in the following quote, when a participant is describing why he uses his mobile phone at work:

You always want to be in touch or like to be in touch with your friends. For me, like if I’m at work and I’m not around the people that I see frequently, I feel obviously more comfortable with them and sometimes I’ll just get in touch with them for the hell of getting in touch with them because I am closer to them and because I’m away from them in a different environment. (Male, 20)

Thus, mobile phone use allows young people to maintain feelings of belonging when apart from those people who matter to them.

Belonging promotes self-esteem as people feel valued by others (Baumeister & Leary, 1995). Mobile phone use provided participants with a feeling of belonging and connectedness to others, consequently assisting psychological well-being. As two participants state:

I think that most people want to feel loved really, deep down. They just like getting a call or getting a message. It might sound lame but I think that’s why they like it. (Male, 21).

When you get messages, nice messages, you feel loved. (Female, 17).
The value of the mobile phone to self-esteem is summarised by one participant’s response to other group members’ comments that she received a large number of mobile phone calls:

What can I say, I’m just popular. (Female, 17).

5.6.2 Social Identity

When social identity is salient, in-group norms become the reference point for much behaviour, particularly, if group membership is valued (Terry & Hogg, 1996). Mobile phone use enabled participants to be a part of their social group and was a normative behaviour of friendship groups, as shown below:

We’re all of a fairly impressionable age and demographic and we see all our friends with a phone so it’s something we have to do as well. (Male, 20).

About 3 years ago … all my friends were saying, you know, get a bloody phone... So I eventually buckled and got one. …and everyone was really proud of me when I got the phone. (Male, 22). [In response to the above comment, another participant in the group commented:] You know you’ve joined the club. (Female, 21).

Usually you’re say with your friends and you’ve got your phone… but if you don’t have, like, have your friends, you have your phone, and then, like all of a sudden, you’re at work and you don’t have your friends or your phone and you’re just like nothing. (Female, 17).

In addition to mobile phone use, in general, being an important part of group behaviour, it emerged that participants’ choice of carrier, level of use and type of use was influenced by the norms of their friendship groups. For instance,
First I was on Telstra [telecommunications carrier] because that’s what I was given and then I changed to Optus [telecommunications carrier] because everyone else was on Optus. (Female, 17).

On a weekend, that’s half of my communication, other people asking me what I’m doing. (Male, 20).

Everyone messages me, so I message back. (Female, 20).

Additionally, participants routinely discussed how responding quickly to mobile contact was normative within their group of friends. Commonly, it was believed that not responding quickly would result in disapproval from peers. Thus, rather than having an explicit demand to respond when contacted, there was an implicit assumption that reciprocal contact was expected, as illustrated in the following quotes:

… I normally feel obliged to reply half the time because you know that they know they’ve sent it to you and if you’re good friends with them you don’t want to just seem like you’re fobbing them off. (Female, 20).

It’s also how other people would react. I mean if you didn’t use your phone or anything like that other people would be getting annoyed at you. It’s just that other people want to contact you and stuff like that…people want an instant reply. People want to talk to you straight away and if you just don’t do that then people aren’t going to bother. (Male, 20).

At times, however, situational influences over-rose the impact of friendship groups norms. In the following quote, one participant describes how she resisted both implicit and explicit pressure to use her phone when she was in a situation where answering her phone would be inappropriate:
When we went out to dinner, a person was trying to call me and they called me about 20 times … It just felt rude because it was a friend but I didn’t answer…and everyone’s like, you’re not answering your phone, wow, that’s a big thing. You know, people think teenagers love their phone but when you’re in situations like that, it feels awkward for you. (Female, 17).

It may also be that power issues are relevant in the above comment. For instance, whilst the channel for communication remained open (the norm amongst the friendship group); it was her personal choice to not answer the call.

According to social identity theory, in-group members are viewed more positively than out-group members (Hogg & Abrams, 1988; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Identification and categorisation processes were highlighted when participants were asked to consider if they knew anyone without a mobile phone. Participants stated that all of their friends and peers had a mobile phone. People of their own age who chose not to have a phone were seen as deviating from the accepted ingroup norms and as being outsiders who were viewed in a negative light as the following descriptions illustrate:

I’d be thinking what a loner. (Female, 17).

Losers. (Female, 16).

It makes them look antisocial… like they have no friends. (Male, 20)

One participant went so far as to ensure that other members of her friendship group, who were present in the focus group, were aware that she didn’t associate with a particular person who didn’t have a phone:

I don’t understand why he doesn’t. He’s not my friend. (Female, 17).
5.7 Discussion

This study adopted a social psychological approach to examine factors relating to mobile phone use amongst Australian youth. Connectedness to others, the need to belong and social identification emerged as major social psychological themes relating to young people’s mobile phone use.

Connectedness to others was revealed as a major benefit of mobile phone use. Barriers, such as geographical distance were overcome, and some mobile phone users reported they felt reassured by the knowledge that they were able to quickly contact other people on their mobile phone. Additionally, participants used their mobile phone to share experiences with distant others. Psychological connection, such as having friends on standby in spite of physical separation, emerged in participants’ descriptions of the benefits of using a mobile phone. Remaining connected to others was a significant influence on many participants’ decision to leave their mobile phone on at all times, indicating that some young people may have developed a need for constant connection. Consequently, data were analysed for factors influencing participants desire to remain continually contactable. The two major social psychological themes explored in relation to mobile phone use were belongingness and social identification.

The study provided support for the role of belongingness on mobile phone use. Consistent with the belongingness hypothesis (Baumeister & Leary, 1995), participants frequently initiated contact with others to facilitate belonging. Belongingness enhances psychological well being as self-esteem is increased when people feel loved or valued (Baumeister & Leary). Young people, in particular, use approval from others to enhance their self-esteem (Rosenberg, 1965). The value of mobile phone use to young people’s
self-esteem was revealed when participants indicated feeling loved, valued, and popular, when contacted on their mobile phone. Thus, positive psychological outcomes, resulted when belongingness needs were met by mobile phone use. It may be that people with a strong need to belong or low self-esteem use their mobile phone to fulfil these needs, subsequently enhancing their psychological well-being.

Previous quantitative research has revealed that ostracism and exclusion from text messaging reduces belonging (A. Smith & Williams, 2004); however, this theme did not emerge in this study. As participants in this study were regular mobile phone users (using their phone at least once per day) the potential for mobile phone exclusion to be discussed may have been reduced. Additionally, the use of focus groups, in this study, may not have provided an appropriate context for participants to discuss ostracism and exclusion as peers were present in the groups. Future research, using individual interviews, may prove useful in exploring the effect that mobile phone exclusion has on belongingness and subsequent psychological well-being amongst youth. We suggest that such research could complement our current research and further our understanding of factors underpinning the decision to own and use a mobile phone. Overall, however, results in this study indicate that a need to belong impacts on mobile phone use amongst a cohort who value friendship and social groups (Arnett, 2004).

Social influences are highly impactful on young people who adopt the norms of the group as guidelines for behaviour (Smetana et al., 2006; Terry & Hogg, 1996). Similar to other research in which implicit and explicit normative pressure from friends and peers influence behaviour (Hopkins, 1994), there was evidence that social identification processes are at play in the context of young people’s mobile phone use.
Explicit and implicit normative pressure to conform to ingroup norms about mobile phone use was perceived by participants. Explicit normative pressure emerged as influencing young people’s decisions to purchase and use a mobile phone. Throughout the discussions, participants indicated reciprocal contact was normative within their friendship groups and not responding to contact on your mobile phone was viewed negatively. Thus, participants felt implicit pressure to use their phone. There were times, however, that contextual influences were more important than conforming to friendship group norms about mobile phone use. For instance, when describing not answering her phone in a restaurant because she felt it was awkward, one participant indicates that there was an expectation from others around her that she would answer the phone. This statement may also reflect an instance when individual power over-rides the influence of group norms. Nevertheless, these results suggest that ingroup norms are highly influential for mobile phone use and norms about appropriate and inappropriate behaviour are still developing.

Consistent with social identity theory, in which in-groups are viewed more favourably than out-groups (Hogg & Abrams, 1988), people who did not own a mobile phone were perceived in a negative light. Thus, it appears that non-mobile phone owners can comprise an out-group whilst owning a mobile phone confers in-group status. This idea is reinforced by participants identifying that owning a mobile phone means you are part of the club. Overall, results in this study show strong support for the role of social identification processes in mobile phone use amongst youth. Group-based norms impacted upon individual group members’ mobile phone use behaviour and the simple act of owning a mobile phone facilitated the membership of valued social groups.
The findings that belongingness and social identification are related to mobile phone use reveal the importance of these two constructs to young people’s social development. First, young people are at an age where they are developing a sense of identity outside the immediate family environment (Smetana et al., 2006). Thus, rather than seeking to belong to a family network, young people rely on friends and peers to provide a sense of community and connection (Smetana et al.). As such, belongingness needs in young people may be more likely to result in a strong social identification with friendship groups. Results in this study reveal that belongingness motives were related to frequent mobile phone use amongst young people. Additionally, mobile phone use enabled young people to feel they belonged to their wider social network, potentially enhancing their social identification. Mobile phone use was a normative behaviour amongst friendship networks influencing level and type of use. Thus, the role of social psychological factors is an important consideration when seeking to understand young people’s use of communication technologies.

5.7.1 Limitations

There are some key limitations in this study which may have impacted on results. First, participants in the study were drawn from an urban community. As such, the factors influencing their use of mobile technology may differ to rural communities which are more geographically fragmented. Additionally, within Australia, many rural communities have poor mobile phone coverage limiting the use of mobiles in these areas (Allen Consulting Group, 2005). Thus, it may be that the relationship between mobile phone use, belongingness, and social identification processes, will be different amongst rural mobile phone users.
Second, participants in the study were all mobile phone users with groups comprising a mixture of people with differing levels of use. Although measures were taken to facilitate open discussion amongst group members, it may be that people who used their phone more or less than the majority of group members did not fully share their opinion. Future research could allocate participants to groups according to their level of mobile phone use so that comparative analyses could be conducted between user groups. Additionally, inclusion of a group of non-mobile phone users would allow for an exploration of psychological differences between people who use a mobile phone and those who do not, which may provide insight into another ingroup/outgroup dichotomy in this area.

Finally, pre-existing theories were used to understand the findings of this study, potentially limiting the interpretation of results. Whilst belongingness (Baumeister & Leary, 1995) and social identification (Turner et al., 1987) emerged as being related to mobile phone use, a grounded theory approach (see Strauss & Corbin, 1998) may allow for development of new theories specifically relating to mobile phone use to be established. Alternatively, it may emerge that other established social psychological theories could explain psychological factors relating to young people’s mobile phone use. For instance, the ability to be connected without a face-to-face presence may be understood by optimal distinctiveness theory (ODT, Brewer, 1991) in which people seek to fit into a group whilst standing out from the group. Future research could investigate the utility of alternate theories in explaining mobile phone use amongst youth. In spite of the limitations of this study, the research provided an initial understanding of how
belonging and social identity impact on young people’s mobile phone use and signalled a number of directions for future research.

5.7.2 Future Research

This study provided a preliminary understanding of young adults’ perspectives on social psychological factors influencing their mobile phone use. Given that the need to belong and social identity factors emerged as motivations for young people’s mobile phone use, a quantitative study could investigate the relative impact of these two constructs on level of mobile phone use and patterns of mobile phone behaviour. It may be that people who have a high need for belonging or a strong social identification with specific referent groups where mobile phone use is valued are more likely to engage in high level or excessive use and particular patterns of use.

As belongingness and social identification were associated with mobile phone use, further research could seek to identify the interplay between these two constructs in linking group process factors to mobile phone behaviour amongst social networks. Additionally, future research could examine the extent to which alternate theories, such as ODT (Brewer, 1991), apply to mobile phone use. It may be that the dialectical motives posited by ODT explain some of the contradictory findings in mobile phone research, such as why many young people personalise their mobile phones (Katz & Sugiyama, 2005) (potentially a stand out motive) when mobile phone use is an intrinsic part of group behaviour (a fit in motive). As belongingness motives influence people’s perception of their group memberships (Gardner, Pickett, & Brewer, 2007), future research could investigate the relationship between these two constructs in the context of mobile phone use.
Finally, two issues that were unable to be fully explored in this study, relationship status and personal power, may also warrant further investigation. Future research could investigate whether belongingness and social identification changes throughout the period of young adulthood. For instance, a participant in this study commented that he is less likely to use his phone to contact a wide circle of friends as he has a partner. It may be that, as relationships become more stable, the need to belong is met by one person and social identification becomes less influential on behaviours such as mobile phone use. Additionally, results suggest that there are times when young people choose not to answer their phone in spite of normative pressure to do so. Further research into when personal power over-rides established ingroup norms in the context of mobile phone use, may inform the relationship between self and social identification factors.

In conclusion, this study adds to the growing body of research investigating psychological factors underpinning mobile phone use. In particular, the present research provides insight about how social psychological factors influence mobile phone use amongst Australian youth and provides a foundation for further research in this area. Use of a qualitative approach provided a rich description of young people’s mobile phone use so that the perspectives of young mobile phone users could be explored. Young people value being constantly connected to others via their mobile phone with the need to belong and social identity processes being related to young people’s mobile phone use. Future research should investigate the relationship between belongingness and social identity factors as they relate to mobile phone use to improve understanding of the interplay between these constructs. Overall, the information gained in this
exploration of mobile phone use amongst Australian youth assists in our understanding of how young people use communication technologies to facilitate their social connection.
CHAPTER 6: YOUNG AND CONNECTED: PSYCHOLOGICAL INFLUENCES OF MOBILE PHONE USE AMONGST AUSTRALIAN YOUTH.

6.1 Notes

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The candidate is first author on this published paper and was responsible for all aspects of manuscript preparation including reviewing the literature, developing the rationale for the research, conducting data collection, analysing the data, interpreting the research findings, and writing the manuscript. The second and third authors are members of the candidate’s supervisory team and their contribution has been supervisory in nature. All co-authors provided permission for this paper to be included in this PhD dissertation.

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The data collection instruments used in the studies reported in this paper are contained in Appendices A and B.
6.2 Abstract

Two studies investigating psychosocial factors influencing mobile phone use amongst Australian youth are reported. In Study 1, focus groups comprising 32 participants, three major benefits of mobile phone use emerged: self, social, and practical. Additionally, symptoms of behavioural addiction were indicated. Study 2, used a uses and gratifications theory framework to investigate factors underlying mobile phone use, in particular, indicators of addiction. Participants (N = 946) completed a questionnaire assessing level of mobile phone use; uses and gratifications relating to use; and three addiction indicators, withdrawal, loss of control and salience. Three mobile phone gratifications, self, social, and security, were revealed. Social and self gratification predicted level of use and addictive tendency, with self gratification exhibiting the greatest impact on the three addiction indicators. Results of the two studies assist in understanding young people’s use of mobile phones, providing a foundation for future research in mobile phone addiction.
6.3 Introduction

Over 93% of Australian youth, aged 15 to 24 years, own a mobile phone (Galaxy Research, 2004). Some users engage in low level or minimal use, whilst others engage in high level or excessive use (Bianchi & Phillips, 2005; Walsh & White, 2006). Additionally, problematic use including texting when driving (Pennay, 2006), inappropriate use, such as in cinemas and lectures (Walsh & White, 2006) and debt arising from excessive use (Griffiths & Renwick, 2003) have been reported. In recent literature examining mobile phone use, an emerging theme has been that of mobile phone addiction. For instance, items measuring addiction symptoms were included in a problematic mobile phone use scale (Bianchi & Phillips, 2005) and addictive patterns of consumption have been noted amongst some users (James & Drennan, 2005; Wilska, 2003).

Addictive behaviour is defined as an over-attachment to an object or activity (Orford, 2001). Technological devices which provide positive benefits become an intrinsic part of people’s lifestyles, subsequently increasing the potential for addiction to develop (Shaffer, 1996). Indicators of behavioural addiction include withdrawal (negative physiological or psychological response to not engaging in the behaviour); loss of control (engaging in the behaviour more than intended); and salience (the activity dominating thoughts or behaviour) (Brown, 1997). Australian youth have grown up with mobile technology and have incorporated mobile phone use into their daily lives; thus, they are arguably the most likely cohort to be demonstrating symptoms of addictive behaviour. Understanding the expected and actual benefits of the behaviour assists in understanding how addictions develop (Orford). Previous research has found the most
widely acknowledged benefits of mobile phone use, particularly for young people, are ease of contact and constant availability facilitating communication amongst social networks (e.g., Ling, 2004; Wei & Lo, 2006). Additionally, the mobile phone has been found to be a reflection of young people’s self-identity (Katz & Sugiyama, 2005; Walsh & White, 2007).

It should be noted that previous research investigating mobile phone use has generally measured level of use in an effort to gain an understanding of people’s relationships with their phones. However, it has been found that measures of level of use are unreliable with people over or under-estimating their use when compared to their mobile phone accounts (A. A. Cohen & Lemish, 2003). Additionally, in attempts to gauge problematic use, it has been argued that excessive use differs from addiction as some people may perform an activity excessively without developing an addiction (J. P. Charlton & Danforth, 2004). Negative physiological or psychological outcomes, such as withdrawal, are indicative of addiction and may develop in people who perform a behaviour at any level, not just excessively (J. P. Charlton & Danforth). Given this theoretical distinction, the present research aimed to examine the presence of addictive symptoms as defined by addiction literature, as well as assess general levels of use.

As most previous research examining mobile phone use has been conducted overseas, it is unknown whether findings of overseas research are applicable to Australian youth. This paper, then, reports part of a research program investigating psychosocial influences of young Australians’ mobile phone use. First, focus groups were conducted to gain an understanding of young people’s perceptions of mobile phone use and to identify whether symptoms of addictive behaviour emerged. Second, a large-
scale quantitative study applied uses and gratifications theory to investigate which gratifications influenced mobile phone use and symptoms of addictive behaviour.

6.4 Study 1

Study 1 was a qualitative study designed to elicit young Australians’ perspectives on the role of mobile phone use in their lives and to identify potential indicators of mobile phone addiction. Most Australian psychological research investigating mobile phone use has comprised quantitative studies (e.g., Bianchi & Phillips, 2005; Walsh & White, 2006). Whilst quantitative studies allow for the identification and prediction of behavioural influences, they are generally developed on the basis of a pre-existing theoretical basis. In contrast, qualitative research produces descriptions of behaviour enabling the development of focussed on-going research questions (Mitchell, 2004). The present study explored young people’s experiences and perspectives on mobile phone use.

6.4.1 Method

Thirty-two participants (13 males, 19 females), aged 16 to 24 years ($M = 19.59, SD = 2.37$) were recruited by a snowballing method. Occupations included full-time students, hospitality workers, and business professionals. A focus group discussion guide, comprising a series of focussing statements and open-ended questions, was designed to initiate discussion amongst participants (Silverman, 2005). Topics included patterns of daily mobile phone use, benefits and problems arising from mobile phone use, and thoughts about being unable to use their mobile phone (e.g., “Thinking of a time when you were unable to use your mobile phone… What were your
thoughts/feelings at that time?”). In all, six focus groups, lasting approximately 1 hour each, were conducted until saturation had been reached.

Discussions were audio-recorded and the researcher transcribed each tape prior to the commencement of the next group. During transcription, emerging concepts were noted. Common concepts which arose within groups and across groups guided the subsequent thematic data analysis.

6.4.2 Results

Analysis revealed that the mobile phone provided a number of practical and psychological benefits for users. Overall, social factors emerged as being most strongly related to mobile phone use amongst these participants. The most commonly cited benefit of using a mobile phone was the ability to quickly and easily contact others in spite of geographical distance or time constraints. This concept is demonstrated in the following quote:

I’m a very social person…I love to talk to a lot of people…and I’ll try to expand and try and talk to as many people as I can, and I use the phone to do that. (Male, 20).

Another theme to emerge was that of enjoyment or self-gratification. Some participants reported they used their phone to seek social support when they were feeling depressed or lonely. Additionally, using a mobile phone provided pleasurable distraction during times of boredom or inactivity as follows:

When I’m bored I use my phone a lot and message a coupla different people … it’s kind of entertaining (Female, 17).
The final theme to emerge was that mobile phones were used for practical purposes, such as arranging transport (primarily amongst younger participants) and use in emergencies. Females, in particular, reported using their mobile phone as a security device (particularly when alone at night).

6.4.2.1 Addiction Symptoms

Symptoms of addictive behaviour emerged when participants were describing their mobile phone use. Participants reported feeling frustrated, angry and concerned at times when they were unable to use their phones, indicating that withdrawal is occurring. The most common symptom of withdrawal reported, however, was feeling ‘lost’.

I’d probably be a little lost simply because I use it so much. (Female, 24)

Additionally, some participants reported they lost track of their mobile phone use, indicating the occurrence of compulsive behaviour. A number of participants reported being surprised at how much they had used their phone when they received their phone bill.

Finally, the addiction symptom of salience was indicated when participants discussed how mobile phone use dominated their thoughts and behaviour. Participants reported that mobile phone use was most salient following times that they had not used it, such as waking up in the morning. The most commonly performed behaviour was checking the mobile phone for missed messages or calls:

Sometimes I check my phone even though I know it’s sitting right in my pocket. I know that nothing, got no messages, but I’ll check my phone. (Female, 17).
6.4.3 Discussion

Study 1 investigated the young Australians’ perspectives in relation to mobile phone use. Three major reasons for use, classified as social, self, and practical gratifications, emerged during the discussions. The mobile phone was used for social purposes, enabling participants to quickly and easily contact friends and wider social networks. Using the mobile phone to relieve boredom and for entertainment indicated fulfilled self gratifications. Finally, the mobile phone was valued for practical purposes such as emergency contact and organising transport.

Symptoms of addiction (i.e., withdrawal, loss of control, and salience) emerged in this study. Participants reported feeling uneasy when unable to use their phone, losing track of their mobile phone use, and that mobile phone use dominated their behaviour. The findings of a number of distinct reported gratifications of mobile phone use, in addition to the emergence of addiction symptoms, allowed for the development of a theoretical base to inform Study 2, a large scale quantitative analysis of the relationship between the functions served by the mobile phone and resultant patterns and experiences of usage.

6.5 Study 2

The results in Study 1 provided the foundation of a larger quantitative study. First, as the themes that emerged in Study 1 (self, social and practical gratifications) are similar to previous overseas research using a uses and gratifications theory approach, this perspective was also adopted as the theoretical framework for Study 2. Second, as symptoms of addictive behaviour emerged during participants’ descriptions of their
mobile phone use in Study 1, Study 2 investigated explicitly the psychosocial factors impacting on indictors of mobile phone addiction.

6.5.1.1 Uses and Gratifications Theory

Uses and gratifications theory is used widely to understand individuals’ use of media and mass communications, such as newspapers, television, and the internet (see Ruggiero, 2000 for a review). Uses and gratifications theory posits that people are motivated to use technologies which gratify social and psychological needs. Uses and gratifications theory has been utilised to understand reasons for, and outcomes of, mobile technology use in countries including Hong Kong (Leung & Wei, 2000); Taiwan (Wei & Lo, 2006); and Turkey (Ozcan & Kocak, 2003). Whilst the labels of the constructs vary across studies (a noted limitation of the theory, see Ruggiero), three major gratifications are found in relation to mobile phone use.

First, the mobile phone fulfils social gratifications by facilitating contact between social networks subsequently enhancing social inclusion (Wei & Lo, 2006). Second, mobile phone fulfils self gratifications by providing a means of entertainment and improving self-esteem and status amongst peers (Ozcan & Kocak, 2003). Finally, the mobile phone is a beneficial tool for organising people’s lives and for remaining contactable at all times (Ozcan & Kocak). To date, uses and gratifications theory has not been applied to mobile phone use in Australia.

6.5.1.2 Addiction Indicators

In addition to the mobile phone use gratifications identified in Study 1, three indicators of addiction, withdrawal, loss of control, and salience, also emerged. To understand addictive behaviours, it is necessary to investigate the psychological factors...
underpinning the behaviour (Nakken, 1996). Thus, Study 2 aimed to investigate the psychosocial factors relating to mobile phone use and indicators of mobile phone addiction. The first research question explored which uses and gratifications relate to young Australians’ reported levels of mobile phone use. The second research question explored the relationship between mobile phone use gratifications and three indicators of addictive behaviour, withdrawal, loss of control and salience.

6.5.2 Method

6.5.2.1 Participants

Participants \( (N = 946; 59\% \text{ females, } 41\% \text{ males}) \) aged 15 to 24 years \( (M = 18.27, SD = 2.26) \) were recruited from private and public schools; university campuses; youth organisations; and snowballing methods. Participants included students, tradespeople, and professional workers.

6.5.2.2 Materials

The study consisted of a survey comprising questions measuring general level of mobile phone use, uses and gratifications items, and items assessing symptoms of addiction. Questions were derived from the results of the Study 1 and also following a review of general and problematic mobile phone use, technological addiction, and uses and gratifications literature.

6.5.2.2.1 General mobile phone use. Four open response items (average number of calls made; calls received; texts sent; and texts received each day) assessed level of mobile phone use (e.g., “How many calls would you make on your mobile phone per day?”).
6.5.2.2.2 Uses and gratifications items. Twenty-four uses and gratifications items covering self, social, and practical gratifications (See Table 1) were developed on the basis of results of the pilot study and from previous research (e.g., Ozcan & Kocak, 2003; Wei & Lo, 2006). Responses were scaled from 1 = strongly disagree to 7 = strongly agree.

6.5.2.2.3 Addiction indicators. Three items measuring withdrawal (“I feel lost without my mobile phone”), compulsion or loss of control (“I find it hard to control my mobile phone use”), and salience (“The first thing I do in the morning is check my mobile phone”), scored from 1 = strongly disagree to 7 = strongly agree, served as addiction indices.

6.5.3 Results

6.5.3.1 General Mobile Phone Use

Overall, SMS was the most common form of mobile phone use. Participants received an average of 7.38 (SD = 9.30, range 0 – 100) text messages per day and sent an average of 6.9 (SD = 8.29, range 0 – 80) text messages per day. Participants received an average of 3.12 (SD = 3.82, range 0 – 55) calls per day and made an average of 2.52 (SD = 3.20, range 0 – 55) calls per day. The four items, text messages received; text messages sent; calls received; and calls made; were summed forming a scale reflecting average daily level of use (Cronbach’s alpha .80). Participants used their phone for calls or text messages an average of 4.97 (SD = 5.08) times per day.

6.5.3.2 Uses and Gratifications of Mobile Phone Use

To determine which gratifications applied to Australian youth, a principal components analysis with varimax rotation was performed on the 24 items designed to
assess mobile phone use gratifications. Seven items which cross-loaded at higher than .35 (indicating they did not load onto a specific factor) were removed from analysis. As shown in Table 6.1, the 17 retained items produced a 3 factor solution explaining 57.37 percent of the variance. Items loading on each factor were scaled to create three reliable gratification indices.

The first factor, labelled *self* gratifications, reflects the use of a mobile phone for enjoyment or pleasure ($M = 3.37, SD = 1.30$, Cronbach’s alpha = .88). Although this factor explains the largest proportion of variance, items in this factor have the lowest mean values indicating that participants are least likely to use their mobile phone for self gratification.

Items in factor 2 reflected *social* gratifications ($M = 5.40, SD = 1.04$, Cronbach’s alpha = .78) with the highest level of agreement for the reason for use being to contact friends. Two items on this factor cross-load on other factors at higher than .3. The first item, to let others know I care for them, also loads onto factor 1 (.34) and the second item, planning social activities, also loads onto factor 3 (.33).

Factor 3 ($M = 5.93, SD = 0.92$, Cronbach’s alpha = .79) comprises items reflecting the practical use of mobile phone such as arranging transport and letting others know where I am. However, items relating to emergency contact load most highly on this factor. Thus, this factor was labelled *security* gratifications. Means in this factor indicate that participants agree that a mobile phone is highly beneficial for use as a security tool. Items reflecting emergency use had the highest means of all the uses and gratifications items indicating that, overall, participants consider that the most important benefit of using a mobile phone is remaining contactable for emergency situations.
Table 6.1
Means, Standard Deviations, and Factor Loadings for Uses and Gratifications Items

<table>
<thead>
<tr>
<th>I use my mobile phone</th>
<th>Mean</th>
<th>SD</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because it makes me feel good</td>
<td>3.22</td>
<td>1.72</td>
<td>.80</td>
<td>.16</td>
<td>-.06</td>
</tr>
<tr>
<td>For fun</td>
<td>3.82</td>
<td>1.78</td>
<td>.79</td>
<td>.25</td>
<td>.01</td>
</tr>
<tr>
<td>For entertainment</td>
<td>3.82</td>
<td>1.77</td>
<td>.77</td>
<td>.19</td>
<td>.02</td>
</tr>
<tr>
<td>To pass time</td>
<td>3.60</td>
<td>1.74</td>
<td>.75</td>
<td>.18</td>
<td>.03</td>
</tr>
<tr>
<td>Because it is cool</td>
<td>2.95</td>
<td>1.70</td>
<td>.74</td>
<td>.02</td>
<td>-.07</td>
</tr>
<tr>
<td>To relax</td>
<td>3.15</td>
<td>1.72</td>
<td>.71</td>
<td>.09</td>
<td>.04</td>
</tr>
<tr>
<td>As a fashion accessory</td>
<td>2.86</td>
<td>1.80</td>
<td>.70</td>
<td>.01</td>
<td>.06</td>
</tr>
<tr>
<td>To get news and information</td>
<td>3.42</td>
<td>1.83</td>
<td>.60</td>
<td>.12</td>
<td>.05</td>
</tr>
<tr>
<td>To stay in touch with people I don’t see</td>
<td>5.20</td>
<td>1.57</td>
<td>.18</td>
<td>.77</td>
<td>.09</td>
</tr>
<tr>
<td>(continued)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To contact my friends</td>
<td>5.92</td>
<td>1.09</td>
<td>.13</td>
<td>.73</td>
<td>.28</td>
</tr>
<tr>
<td>To let others know I care for them</td>
<td>4.74</td>
<td>1.69</td>
<td>.34</td>
<td>.66</td>
<td>.09</td>
</tr>
<tr>
<td>To plan social activities</td>
<td>5.73</td>
<td>1.27</td>
<td>.11</td>
<td>.64</td>
<td>.33</td>
</tr>
<tr>
<td>To stay in touch with my family</td>
<td>5.48</td>
<td>1.48</td>
<td>.05</td>
<td>.57</td>
<td>.25</td>
</tr>
<tr>
<td>To be contactable in case of emergency</td>
<td>6.19</td>
<td>1.08</td>
<td>-.10</td>
<td>.22</td>
<td>.82</td>
</tr>
<tr>
<td>To be able to contact others in an emergency</td>
<td>6.17</td>
<td>1.06</td>
<td>-.09</td>
<td>.29</td>
<td>.76</td>
</tr>
<tr>
<td>To arrange transport</td>
<td>5.72</td>
<td>1.26</td>
<td>.04</td>
<td>.12</td>
<td>.75</td>
</tr>
<tr>
<td>To let others know where I am</td>
<td>5.64</td>
<td>1.29</td>
<td>.14</td>
<td>.22</td>
<td>.68</td>
</tr>
</tbody>
</table>

Eigenvalue                                  | 4.52 | 2.66| 2.57|
Variance explained (%)                       | 26.63| 15.64| 15.10|

Note: Items were scaled 1 = strongly disagree to 7 = strongly agree
Three scales were formed reflecting self, social, and security gratifications. Multiple regressions were conducted to examine the role of gratifications on average daily level of mobile phone use. As shown in Table 6.2, the three gratifications predicted level of use; however, the gratifications explained a small proportion (7%) of variance only. Social gratification emerged as the strongest predictor of use followed by self gratification. Security did not predict level of use.

Table 6.2
*Multiple Regression Analysis predicting Daily Use*

<table>
<thead>
<tr>
<th>Variable</th>
<th>R</th>
<th>ΔR²</th>
<th>F</th>
<th>B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily level of use</td>
<td>.27</td>
<td>.07</td>
<td>24.12***</td>
<td>.64</td>
<td>.16***</td>
</tr>
<tr>
<td>Self</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>.85</td>
<td>.17***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>-.23</td>
<td>-.04</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

***p<.001

6.5.3.3 Level of Use and Addiction Indicators

Correlations between level of use and the three addiction indicators were examined to ensure that level of use and addiction symptoms were distinct concepts. Significant positive correlations ranging from .23 to .27 were found between level of use and withdrawal, loss of control, and salience. Although significant, results indicate a relatively weak relationship between level of use and the three addiction symptoms, suggesting that they reflect different constructs.

6.5.3.4 Addiction Indicators

The most commonly reported indicator of addiction was withdrawal, or feeling lost when without their phone, (M = 4.16, SD = 2.00). Salience, measured by checking
the phone first thing in the morning, was the second most common addiction indicator ($M = 3.57$, $SD = 1.97$). Fewer than half of the participants reported that it was hard to control their mobile phone use ($M = 2.61$, $SD = 1.63$). As pooling of the three addiction items resulted in a low Cronbach’s alpha (.65), separate analyses were conducted to examine the predictors of each addiction indicator.

Multiple regression analyses were performed testing the role of self, social, and security gratifications on the addiction indicators of withdrawal, salience, and loss of control. As shown in Table 6.3, the gratifications of mobile phone use significantly accounted for between 18% and 24% of the variance in the addiction indicators. Self-gratification emerged as the strongest overall predictor of the addiction indicators, followed by social gratification. Security gratification did not significantly predict addictive tendencies.
Regression analyses were also conducted controlling for the effect of reported level of use at the first step. A similar pattern of results emerged.

6.5.4 Discussion

Study 2 identified, quantitatively, the uses and gratifications relating to mobile phone use amongst Australian youth. The study also explored the relationship between mobile phone use gratifications and indicators of addiction. Three gratifications, self, social, and security, were found to underlie mobile phone use. The weak relationship
Mobile phone involvement indicates that behavioural addiction differs from excessive or high level use. Results of regression analyses revealed that social and self gratification predicted level of use and addictive tendencies, with self gratification emerging as the strongest predictor across the three addiction indicators. Security gratification did not significantly predict level of use or the addiction indicators.

Self gratification related to using the mobile phone for enjoyment or pleasure. Items in this factor included using the mobile phone for fun and to feel good. Self gratification had the lowest mean value of the gratifications scales indicating that participants report they are less likely to use their mobile phone for self gratification compared to social or security gratifications. Two items reflecting use of the mobile phone for self-image had the lowest means amongst all the uses and gratifications items. Thus, participants in this study were less likely to use their phone as a fashion item than for any other purpose.

Second, mobile phones were used to fulfil social gratification with participants using the phone to stay in contact with friends and valued others. The high mean values of social gratification items reveals that mobile phones were valued for this purpose. Two items in this factor, letting others know you care for them and planning social activities, cross-loaded with self and security gratifications respectively. Thus, it appears that people derive enjoyment from contacting others and that using the mobile phone for planning social activities is related to security.

Finally, security gratifications were valued by participants. Being contactable or being able to be contacted in case of emergency had the highest mean values amongst
all the uses and gratifications items. Thus, having a mobile phone appears to allow participants to gain a psychological benefit of feeling secure. The inclusion of arranging transport and staying in touch with my family in this factor suggests that contacting others to inform them of where you are increases the perception of security.

The three gratifications accounted for a small amount of variance only in young people’s mobile phone use with both social and self gratifications emerging as the significant predictors of mobile phone use. In contrast, gratifications accounted for a moderate proportion of variance in the three addiction indicators (withdrawal, salience, and loss of control). While both self and social gratifications significantly influenced addiction tendency, self gratifications emerged as the stronger predictor across all three addiction indicators. Thus, it appears that, while both self and social gratifications influence people to use their mobile phone, it is especially those who derive self gratification from mobile phone use who are more likely to demonstrate addictive tendencies.

Some limitations of Study 2 should be noted. Youth in Australia have grown up with mobile telephones and have incorporated the mobile phone into their daily lives. It may be that factors which are not included in the uses and gratifications framework (such as environmental or contextual influences) reduce the influence of gratifications on overall use. Additionally, it must be noted that a number of original items in the pool (primarily relating to social and security factors) were removed from analysis due to cross-loading and that two items in the final pool loaded onto more than one factor. These measures should be refined in future research.
Uses and gratifications theory has been criticised for producing inconsistent and vague gratifications (Ruggiero, 2000) which describe reasons for people adopting and using a medium rather than allowing for the development of causal explanations for behaviour (McQuail, 2001). The emergence of self, social, and security factors, in this study, suggests that inclusion of more specific predictors such as self identity, social identity, and personality factors such as an anxious disposition, may improve the prediction of mobile phone use.

### 6.6 General Discussion

This research integrated qualitative and quantitative research methods to improve our understanding of the psychological factors relating to mobile phone use amongst Australian youth, a relatively under-researched area. Qualitative methods in Study 1 allowed for young people’s perspectives on mobile phone use to form the foundation of Study 2 which explored uses and gratifications relating to mobile phone use and addictive tendencies.

In both studies, three gratifications, self, social, and security, emerged in relation to mobile phone use. In contrast to previous overseas research (e.g., Ozcan & Kocak, 2003) participants in these studies did not value the mobile phone as a fashion item or status symbol. Self gratification, in these studies, related to using the mobile phone for enjoyment or pleasure and was most predictive of addiction symptoms. Similar to previous research (e.g., Wei & Lo, 2006), the mobile phone was used to provide social gratification. Using a mobile phone facilitates contact between friends and family, subsequently expanding social networks and enhancing social inclusion (Ling, 2004). Finally, mobile phones were used for security purposes with the majority of participants...
in Study 2 reporting that they used their mobile phone to remain contactable in emergency. However, similar to previous research, security gratifications did not predict level of use (Ozcan & Kocak, 2003). Thus, whilst young Australians valued the security benefits derived from using a mobile phone, it is social and self gratifications which are most influential on level of use and addictive tendencies.

Indicators of behavioural addiction, withdrawal, salience, and loss of control, were revealed in both studies. These findings build on previous research signalling the emergence of mobile phone addiction (e.g., Bianchi & Phillips, 2005) by identifying and measuring specific indicators of addiction. Withdrawal was referred to as feeling lost when without their mobile phone and was the most commonly reported indicator of addiction. Mobile phone use was a highly salient behaviour amongst participants emerging as the second highest addiction indicator. Finally, loss of control over the mobile phone use was reported in both studies.

The findings in this study have implications for programs designed to discourage inappropriate or problematic use. As it would be expected that people who demonstrate signs of addiction are most likely to engage in inappropriate use (Bianchi & Phillips, 2005), written appeals to use phones appropriately in schools or when driving may not be sufficient. People with addictive tendencies experience a compulsive drive to engage in the activity irrespective of societal constraint and, as such, it is important to address the psychological factors relating to the behaviour (Orford, 2001). The finding that self gratification was the most impactful predictor suggests that campaigns may need to highlight that appropriate mobile phone use is more important than the personal pleasure gained from using a mobile phone.
Overall, the two studies reported in the present research obtained converging qualitative and quantitative evidence for the uses that the mobile phone serves amongst young Australians. Specifically, self, social and security gratifications emerged as relevant to this cohort. In addition, both studies suggest the presence of mobile phone addiction tendencies, as indicated by symptoms of withdrawal, salience and control, amongst Australian youth. The relationship between the function that mobile phones serve and both the patterns of use and tendency towards addiction was also explored. While both social and self gratifications impacted upon level of use and addictive tendency, it was especially those who derive self gratification from their mobile phone use who are more likely to demonstrate addiction symptoms. The results of these two studies serve to improve our understanding of the underlying factors influencing young people’s mobile phone use and provide insight into the impact of these factors on the tendency towards addictive behaviour amongst young Australians.
CHAPTER 7: NEEDING TO CONNECT: THE EFFECT OF SELF AND OTHERS ON YOUNG PEOPLE’S INVOLVEMENT WITH THEIR MOBILE PHONES

7.1 Notes

This paper is reproduced from:


The candidate is first author on this submitted paper and was responsible for all aspects of manuscript preparation including: reviewing the literature; developing the rationale for the research; designing the primary measure; organising and conducting data collection; analysing and interpreting the data; and writing the manuscript. The second and third authors are members of the candidate’s supervisory team and their contribution has been supervisory in nature. All co-authors provided permission for this paper to be included in this PhD dissertation.

This paper has been submitted for publication to a peer reviewed international journal. The journal is listed in the Social Sciences Citation Index and is recognised for the HERDC. The 2007 Impact Factor for the journal is 0.947.

The data collection instruments used in the study reported in this paper are contained in Appendix B.
7.2 Abstract

The present research examined psychological factors impacting on young Australians’ mobile phone behaviour. In particular, the study explored mobile phone involvement reflecting people’s cognitive and behavioural interaction with their mobile phone. Participants were 946 Australian youth aged between 15 and 24 years. A descriptive measurement tool, the Mobile Phone Involvement Questionnaire (MPIQ), was developed. Self-identity and validation from others were explored as predictors of frequency of mobile phone use and mobile phone involvement. Although frequency of use increased as mobile phone involvement increased, results revealed that a distinction exists between these behaviours. Self-identity, but not validation from others, predicted frequency of mobile phone use whilst both self-identity and validation from others predicted mobile phone involvement. The findings of the present study contribute to our understanding of psychological processes relating to emerging patterns of young Australians’ mobile phone behaviour.
7.3 Introduction

Mobile phones are an integral part of society with young people, in particular, embracing the technology. In Australia, youth have the highest levels of mobile phone ownership amongst all demographic groups and are prolific users of the technology (Australian Communications and Media Authority, 2008a) with younger mobile phone users more likely than older users to engage in high level and problematic mobile phone use (Bianchi & Phillips, 2005; Walsh & White, 2006). For instance, younger drivers use a mobile phone while driving, particularly to send and receive text messages, more often than older drivers (Pennay, 2006; Walsh, White, Watson et al., 2007) and mobile phone debt, sometimes leading to bankruptcy, is an increasing problem for many young users (Griffiths & Renwick, 2003). Additionally, reports of ‘addictive’ forms of mobile use are emerging in the literature (see for example, Bianchi & Phillips, 2005; Ehrenberg et al., 2008; James & Drennan, 2005; Jenaro et al., 2007; Walsh, White, & Young, 2008b; Wilska, 2003).

7.3.1 Mobile Phone Behaviour

One of the difficulties in assessing mobile phone behaviour is due, in part, to the way in which mobile phones are used. The majority of previous research into mobile phone behaviour has focussed on level of use, assessing the amount of time spent using the mobile phone or the number of times a day a person uses their phone for calling or text messaging. However, it has been found that level of use measures are unreliable as many people over or under-estimate their amount of use when compared to their calling records (A. A. Cohen & Lemish, 2003). Additionally, many people check their phone regularly for missed messages or calls (Walsh, White, & Young, 2008b) and keep their
Mobile phone involvement 146

phone in close proximity (Walsh & White, 2006) without actually using their phone; behaviours which are unlikely to be captured in measures of mobile phone use. Thus, measures relying on amount of use alone may not gauge adequately the extent to which people interact with their phones. Some recent research has developed alternate measures of mobile phone behaviour drawn from addiction literature.

Technological addictions, a subset of behavioural addictions, develop when people depend on a technological device to produce favourable outcomes (Griffiths, 1998). Over time, the activity becomes a primary source of pleasure and a major focus in the individual’s life (Loonis et al., 2000). As the dependence on the behaviour increases, the range of alternate activities engaged in to produce positive outcomes decreases (Loonis et al.) and the behaviour impacts negatively on the individual’s life (Brown, 1997; Orford, 2001). Similar to other addictions, behavioural addictions are characterised by a number of symptoms including withdrawal, euphoria, conflict with other people and daily activities, cognitive and behavioural salience, and relapse and re-instatement.

Symptoms of addiction were included in a mobile phone problem use scale (MPPUS) developed by Bianchi and Phillips (2005). Problematic mobile phone use was defined as continued mobile phone use in spite of negative outcomes and societal restrictions. The MPPUS, a 27-item measure, included widely accepted addiction criteria such as tolerance, withdrawal, and euphoria, and was reported to be a reliable and valid measurement instrument. However, a number of items in the scale assessed motivational constructs (such as influences of friends). Thus, the conclusions of Bianchi and Phillips’ study may have been affected by including measurement of the influences
on, rather than only symptoms reflecting, problematic use. The results of Bianchi and Phillips’ study, however, provide a foundation for understanding factors impacting on people’s mobile phone behaviour. For instance, younger people, extraverts, and people with lower self-esteem were more likely to engage in problematic mobile phone use. In contrast, low self-esteem did not predict amount of mobile phone use whilst age (younger) and extraversion did. The finding that self-esteem impacted on problematic use, but not amount of use, suggests that problematic users may be using the mobile phone as a form of self-esteem enhancement.

More recently, Jenaro et al. (2007) assessed the effect of depression, anxiety, and unhealthy behavioural patterns, such as not sleeping well, on cell-phone (mobile) over use. The cell-phone over-use scale (COS) developed by these authors was based on the DSM-IV pathological gambling criteria (American Psychiatric Association, 2000). Whilst the COS was found to be a valid measure, there was a lack of association between the scale and other pathological behaviours (substance abuse and dependency, and pathological gambling) leading the authors to conclude that criteria pertaining to pathological disorders may not be transferable to behavioural addictions. Jenaro et al. reported that approximately 10% of their participants met the criteria for pathological cell-phone use, however, it may be considered premature to categorise mobile phone over-use or over-involvement as a pathological behaviour.

Pathological addictions are generally associated with significant harms to the self and others with the person’s daily activities being severely impacted (Lemon, 2002; Orford, 2001). Thus, the terminology ‘pathology’ may be more appropriate to substance addictions or severe behavioural addictions, such as gambling. Although some mobile
phone users are experiencing negative consequences (e.g., debt) and use their phones at inappropriate and sometimes dangerous times (e.g., when driving), it is not, as yet, evident that these negative consequences are sufficiently debilitating to warrant the behaviour being labelled pathological. Many mobile phone users report significant lifestyle benefits (such as improved social inclusion) (Ling, 2004; O. Peters & ben Allouch, 2005; Walsh & White, 2006) and, whilst some people may demonstrate signs of addiction, it is not clear whether the benefits of the behaviour outweigh any problematic outcomes. Rather than pathologising what may be an adaptive behaviour for some young adults, it may be more appropriate to adopt Orford’s (2001) approach of viewing behavioural addictions as an over-attachment to an activity which is psychological in nature.

Some evidence for this approach was demonstrated by a recent qualitative study reporting symptoms of behavioural addiction in a sample of young Australian mobile phone users (Walsh, White, & Young, 2008b). Using Brown’s (1993, 1997) behavioural addiction components as the data analysis framework, varying levels of withdrawal, salience, loss of control, euphoria, and conflict were revealed. For instance, participants demonstrated conflict with other activities when describing how they used their mobile phone when they were meant to be performing other activities, such as working or listening to lectures. This finding is also supported by other studies in which many mobile phone users’ reported using their phone while driving (Pennay, 2006; Walsh, White, Watson et al., 2007). Additionally, withdrawal or psychological distress (such as feeling lost, depressed) when unable to use the mobile phone was also noted. Most participants, however, ensured that the opportunity for withdrawal did not occur by
ensuring that the mobile phone was always usable suggesting that it is the thought of being without their phone which may cause distress (Walsh, White, & Young, 2008b). In addition to symptoms similar to an addictive behaviour being revealed in Walsh et al.’s study, some users reported that their mobile phone was like an appendage and an important part of their self-concept. Additionally, the phone was believed to be a vital tool for remaining in contact with others. These results indicate that both self-identification and the influence of others may be associated with mobile phone behaviour.

7.3.2 Self-identity and Validation from Others

Self-identity develops over time as externalised roles and behaviours become an internalised part of the person’s self concept (Gergen, 1971; Stryker, 1987). Behaviours which are positively reinforced and perceived as beneficial are more likely to become a valuable part of people’s self-identity. Additionally, the notion of the extended self allows for the incorporation of objects into our self-identity if such objects are believed to reflect our self-concept (Belk, 1988). Mobile phones have been recognised as a form of self-expressive identity (Mannetti et al., 2002; Walsh & White, 2007) with many mobile phone users personalising their phones to express their identity by decorating their phones and having unique ring-tones (Goggin, 2006; Katz & Sugiyama, 2005). Self-identity has also been found to predict level of mobile use, with use increasing as self-identification as a mobile phone user increases (Walsh & White, 2007). These findings suggest it may be worthwhile to assess whether self-identification is related to the level of involvement that people have with their mobile phones.
In addition to the effect of self-identity, it is likely also that the level of involvement people have with their mobile phones is related to their motivation for the behaviour. People are more likely to develop an over-attachment to an activities or behaviours which produce positives outcomes and are socially reinforced (Orford, 2001). One fundamental human motivation is belonging or having strong attachments to others (Baumeister & Leary, 1995). People who feel valued and cared about by others have enhanced self-esteem and psychological well-being (Baumeister & Leary). These positive outcomes may be particularly applicable to people whose self-worth is contingent on approval from others (Crocker & Wolfe, 2001).

Research has consistently shown that many young people believe mobile phone use enhances social inclusion by allowing them to remain in contact with friends and peers at all times (see for example, Ling, 2004; O. Peters & ben Allouch, 2005; Wei & Lo, 2006). Additionally, some mobile phone users report feeling loved and valued when they receive contact on their mobile phone (Walsh, White, & Young, 2008c) and that positive messages are stored on mobile phones so they can be re-read when the user is feeling low (Srivastava, 2005). In contrast, not receiving contact can result in people feeling uncared for by others (Geser, 2004; Walsh, White, & Young, 2008c) with ostracism from text messaging reducing self-esteem (A. Smith & Williams, 2004). The above findings suggest that validation from others, which potentially enhances feelings of self-worth (Crocker & Wolfe, 2001) is a positive outcome for some mobile phone users. As people’s level of involvement with an activity increases when positive outcomes are associated with performance of the behaviour (Loonis et al., 2000; Orford, 2001), it may be that people who receive validation from others via their mobile phone
are more likely to engage in highly frequent use and become over-involved with their mobile phone in a manner similar to an addictive pattern of behaviour.

7.3.3 The Present Research

The present study sought to build on previous research assessing people’s involvement with, and use of, their mobile phone. Similar to other studies which have sought to develop alternate measures of technological engagement, we drew broadly from Brown’s (1993, 1997) behavioural addiction components. Brown’s components have been adapted to measure over-engagement and addiction to technologies including computers (J. P. Charlton, 2002; Giles & Price, 2008) and online game playing (J. P. Charlton & Danforth, 2007) and include symptoms such as cognitive and behavioural salience, withdrawal and loss of control (see Table 7.1). As the number of behaviours which can have addictive qualities is quite broad, Lemon (2002) argues that measures specific to the behaviour being examined must be developed. Thus, we used participant’s descriptions of their mobile phone use as reported by Walsh et al. (2008a) to adapt Brown’s components to mobile phone behaviour.
Table 7.1

*Brown’s (1993, 1997) Behavioural Addiction Components*

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salience - cognitive</td>
<td>The activity dominates the person’s thinking.</td>
</tr>
<tr>
<td>- behavioural</td>
<td>The activity dominates the person’s life.</td>
</tr>
<tr>
<td>Conflict - interpersonal</td>
<td>Performance of the activity leads to conflict with other people.</td>
</tr>
<tr>
<td>– other</td>
<td>Performance of the activity conflicts with other aspects of the person’s life.</td>
</tr>
<tr>
<td>Relief/ euphoria</td>
<td>Positive emotions result from engaging in the activity.</td>
</tr>
<tr>
<td>Loss of control/ tolerance</td>
<td>The person loses control of how much they perform the activity.</td>
</tr>
<tr>
<td></td>
<td>as the behaviour needs to be engaged in a greater extent to experience euphoria.</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>Unpleasant emotions are experienced when the person is unable to perform the activity.</td>
</tr>
<tr>
<td>Relapse and reinstatement</td>
<td>The activity is resumed at the same level following attempts to reduce it.</td>
</tr>
</tbody>
</table>

The research used a population of Australian youth aged between 15 and 24 years. Youth are the first generation to have grown up with mobile technology and, thus, provide a unique cohort to monitor the emergence of new patterns of mobile phone behaviour. In contrast to older Australians, youth have integrated mobile phone use into their daily lives with some young Australians engaging in excessive and/or problematic mobile phone use (Bianchi & Phillips, 2005; James & Drennan, 2005; Mathews, 2004; Walsh & White, 2006). As such, it would be expected that youth are the most likely
group to show signs of high involvement with their mobile phone. Youth are also at a developmental stage in life where they are developing their own self-concept and are highly dependent on the approval of friends and peers to maintain their self-esteem (Arnett, 2004; Smetana et al., 2006). Thus, we included two psychological factors, self-identity and validation from others, to explore the effect of these influences on young people’s mobile phone behaviour.

Three additional factors, age, gender, and type of mobile phone plan, were entered into the model as control factors. Although the age range in the present research was restricted to youth aged between 15 and 24 years, Australians in this age range are at different stages of development. Younger people are more likely to be living at home and attending school, and, as such, their mobile phone use may be influenced by parental and school rules (Mathews, 2004) whilst older youth who live out of home may have fewer restrictions on their mobile phone use (Walsh & White, 2006). Similarly, gender differences may impact mobile phone use. Whilst some authors have found no differences in the amount that each gender uses their mobile phones (O. Peters et al., 2003; Rees & Noyes, 2007), others report that differences exist in the way genders use their mobile phone (Lemish & Cohen, 2005; Leung & Wei, 2000). Given these previous findings, both age and gender effects were controlled for in this study. The final control variable in the present study was type of mobile phone payment method. Many young people are on limited incomes with cost of mobile phone use impacting on how much they use their phone (Walsh & White, 2006). There are now a large range of mobile phone payment methods with many options offering high levels of use for a fixed cost.
As such, payment method may influence mobile phone use and, thus, this factor was controlled for in the current study.

In summary, the present research was a preliminary investigation of psychological factors influencing young people’s mobile phone behaviour. The study explored the relationship between frequency of mobile phone use and mobile phone involvement and gauged the effect of self-identity and validation from others on young people’s mobile phone behaviour. To achieve these goals, a descriptive measure of mobile phone involvement, based broadly on Brown’s (1993, 1997) behavioural addiction components was developed.

7.4 Method

7.4.1 Design and Procedure

The study was a cross-sectional design using a self-report questionnaire. Prior to commencement of the study, ethical approval was obtained from the university’s human ethics research committee. Public and private high schools, universities, and youth organisations were emailed the details of the study. These organisations either arranged for the researcher to visit the location to distribute hard copies of the questionnaire to students or forwarded details of the research on to their students who contacted the researcher for copies of the questionnaire. Parental consent was obtained for participants under 16 years of age.

The majority of participants (83%) completed hard copies of the questionnaire during testing sessions conducted at schools and universities in Brisbane, Queensland. The remaining participants were emailed or posted copies of the questionnaire which they returned to the researcher. All contact details and email addresses were deleted to
maintain anonymity of participants. No other identifying information was collected. A participation incentive of an entry to win one of ten AUD$20 shopping vouchers or double movie passes was offered.

7.4.2 Participants

Nine hundred and forty-six participants, 387 (40.9%) males and 557 (58.9%) females, (2 failed to report gender) aged between 15 and 24 years \((M = 18.27, SD = 2.57)\) took part in the study. The majority of participants (82%) were full-time students with the remainder working in a wide variety of occupations ranging from hospitality to professional positions.

7.4.3 Measures

The questionnaire measured demographics, frequency of mobile phone use, mobile phone involvement, self-identity, and validation from others.

7.4.3.1 Frequency of Mobile Phone Use

Four open response items assessed the average number of calls made, calls received, texts sent, and texts received by participants on their mobile phone each day. An example item was “On average, how many calls would you make on your mobile phone per day?” The four items: text messages received; text messages sent; calls received; and calls made; were summed forming a scale reflecting average daily frequency of mobile phone use \((\alpha = .80)\). Participants also indicated their mobile phone payment method (e.g., pre-paid, monthly account).

7.4.3.2 Mobile Phone Involvement Questionnaire (MPIQ).

An 8-item measure of mobile phone involvement based broadly on Brown’s behavioural addiction components (1993, 1997) and the findings of Walsh et al.’s
(2008) study was developed. An initial pool of 25 items scored on a 7-point Likert scale, 1 (strongly disagree) to 7 (strongly agree), was created with multiple items assessing each of the eight symptoms described in Table 1.

First, data were inspected for breaches of normality. Seven items had curvilinear distributions and were removed from further analysis. The majority of the remaining items were skewed; however, as skewness is less problematic with a large sample size (Tabachnick & Fidell, 2007), raw distributions were retained. Correlations were then conducted between the remaining 18 items. Three items had extremely low correlations (from $r = 0.0 - 0.25$) with other items in the analysis. As correlations of below .30 are difficult to interpret (Tabachnick & Fidell, 2007) and it would be expected that symptoms would be related to each other, these items were removed.

Items were then selected on the basis of previous research and normality statistics. For instance, two items measuring euphoria assessed feelings of connection and excitement, respectively. As previous research has found that connectedness to others is a positive emotion valued by many mobile phone users (O. Peters & ben Allouch, 2005; Walsh, White, & Young, 2008c; Wei & Lo, 2006) and the connectedness item had a less extreme skew (.33) than the item asking whether participants felt excited when contacted on their mobile phone (-.66), the item “I feel connected to others” was retained in the scale. This process proceeded until the final eight items, shown in Table 7.2, were selected.

A principal components analysis revealed that the eight MPIQ items were assessing a unitary construct. One component, explaining 39.62% of the variance, emerged. Items were then summed and averaged to form a reliable scale ($\alpha = 0.78$).
Table 7.2

*Mobile Phone Involvement Questionnaire (MPIQ): Item Means, Standard Deviations, and Component Loadings*

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
<th>Component loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>I often think about my mobile phone when I am not using it (cognitive salience)</td>
<td>2.54</td>
<td>1.58</td>
<td>.66</td>
</tr>
<tr>
<td>I often use my mobile phone for no particular reason (behavioural salience)</td>
<td>3.61</td>
<td>1.83</td>
<td>.71</td>
</tr>
<tr>
<td>Arguments have arisen with others because of my mobile phone use (interpersonal conflict)</td>
<td>2.51</td>
<td>1.73</td>
<td>.54</td>
</tr>
<tr>
<td>I interrupt whatever else I am doing when I am contacted on my mobile phone (conflict with other activities)</td>
<td>3.81</td>
<td>1.79</td>
<td>.61</td>
</tr>
<tr>
<td>I feel connected to others when I use my mobile phone (euphoria)</td>
<td>4.15</td>
<td>1.71</td>
<td>.66</td>
</tr>
<tr>
<td>I lose track of how much I am using my mobile phone (loss of control)</td>
<td>4.03</td>
<td>1.79</td>
<td>.58</td>
</tr>
<tr>
<td>The thought of being without my mobile phone makes me feel distressed (withdrawal)</td>
<td>4.43</td>
<td>1.89</td>
<td>.62</td>
</tr>
<tr>
<td>I have been unable to reduce my mobile phone use (relapse and reinstatement)</td>
<td>2.86</td>
<td>1.70</td>
<td>.65</td>
</tr>
</tbody>
</table>
7.4.3.3  Self-identity

Three items (based on Terry, Hogg, & White, 1999) assessed self-identity or the value of the behaviour to an individual’s self-concept. These items were “Using a mobile phone is very important to me”; “I feel as though a part of me is missing when I am without my mobile phone”; and “I cannot imagine life without my mobile phone”, scored strongly disagree (1) to strongly agree (7). A reliable scale ($\alpha = .78$) was formed by summing and averaging the items.

7.4.3.4  Validation from Others

Three items, “I feel valued when I receive lots of mobile calls or messages”; “Receiving mobile phone calls or messages does not make me feel special” (reversed); “Receiving a mobile phone call makes me feel loved”, scored strongly disagree (1) to strongly agree (7), were developed to measure validation from others. The items were summed and averaged to form an internal reliable measure ($\alpha = .81$).

7.5  Results

7.5.1  Frequency of Mobile Phone Use

As shown in Table 7.3, text messaging was the most common form of mobile phone use. Additionally, participants reported that they were more likely to receive, rather than make, text messages and calls on their phone. In total, participants used their phone for calls or text messages an average of 18.10 ($SD = 20.30$) times per day.
Table 7.3

*Frequency of Mobile Phone Use (per day)*

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text messages received</td>
<td>7.41</td>
<td>9.31</td>
<td>5.00</td>
<td>0 - 100</td>
</tr>
<tr>
<td>Text messages sent</td>
<td>6.93</td>
<td>8.30</td>
<td>5.00</td>
<td>0 - 80</td>
</tr>
<tr>
<td>Calls received</td>
<td>3.13</td>
<td>3.82</td>
<td>2.00</td>
<td>0 - 55</td>
</tr>
<tr>
<td>Calls made</td>
<td>2.53</td>
<td>3.20</td>
<td>2.00</td>
<td>0 - 55</td>
</tr>
</tbody>
</table>

With respect to type of mobile phone payment method, most participants (61.3%) pre-paid for their use with the remainder using monthly plans. Payment method was dichotomised as pre-paid vs not pre-paid in the following regression analyses.

7.5.2 *Mobile Phone Involvement*

As shown in Table 2, the most commonly endorsed item on the MPIQ was withdrawal, followed by euphoria. Cognitive salience was least likely to be reported by participants. The average score on the MPIQ was 3.46 (SD = 1.1) and data were distributed normally.

Participants who scored five or higher (out of a possible seven) on the MPIQ were classified as being highly involved with their mobile phone (n = 84, 8.87%) whilst participants who scored less than 3 were not (n = 192, 15.43%). Examination of the raw data revealed that participants classified as highly involved had positively endorsed the majority (at least five out of seven) of the items in the measure.
7.5.3 *Frequency of Use and Involvement*

A low, but significant, correlation was found between frequency of use and mobile phone involvement, $r = .30$, $p < .01$. To examine this finding further, the data for participants who scored high on the MPIQ were compared with low scorers. High scorers used their mobile phone significantly more times per day ($M = 34.84$, $SD = 26.25$) than low scorers ($M = 14.54$, $SD = 13.71$), $t (397) = 9.665$, $p < .001$. Thus, although the relationship between mobile phone involvement and daily frequency of mobile phone use is relatively weak, people who are highly involved with their phone use their phone more frequently than those who are not highly involved.

7.5.4 *Self-identity and Validation from Others*

Hierarchical regression analyses were conducted to examine the role of self-identity and validation from others on frequency of mobile phone use and the MPIQ. Age, gender and payment method were entered at Step 1, with self-identity and validation from others entered at Step 2. Due to the large sample size, a cut-off value of .001 was used to reduce the potential for Type I error (Tabachnick & Fidell, 2007).

As shown in Table 7.4, self-identity and validation from others significantly improved prediction of both frequency of use and mobile phone involvement over the control variables. Self-identity and validation from others accounted for a relatively small amount of variance (7%) in frequency of mobile phone use, compared to the 56% of variance explained in scores on the MPIQ. Self-identity was the only significant predictor of frequency of mobile phone use, whilst both self-identity and validation from others predicted mobile phone involvement. Thus, the effect of self-identification and validation from others differs according to the type of mobile phone behaviour being
assessed, with validation from others only being associated with mobile phone involvement.

Table 7.4

Regression Analyses: Self-identity and Validation from Others on Frequency of Mobile Phone Use and Mobile Phone Involvement

<table>
<thead>
<tr>
<th>Variable</th>
<th>$R$</th>
<th>$R^2$</th>
<th>$R^2 \Delta$</th>
<th>$F$</th>
<th>$df$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prediction of frequency</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.08</td>
<td>.01</td>
<td>.01</td>
<td>1.81</td>
<td>3,923</td>
<td>-.01</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.04</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.06</td>
</tr>
<tr>
<td>Step 2</td>
<td>.28</td>
<td>.08</td>
<td>.07</td>
<td>36.50*</td>
<td>2,921</td>
<td>.29*</td>
</tr>
<tr>
<td>Self-identity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.06</td>
</tr>
<tr>
<td>Validation from others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prediction of involvement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>.14</td>
<td>.02</td>
<td>.02</td>
<td>6.35*</td>
<td>3,928</td>
<td>-.06</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.02</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.01</td>
</tr>
<tr>
<td>Step 2</td>
<td>.76</td>
<td>.58</td>
<td>.56</td>
<td>621.49*</td>
<td>2,926</td>
<td>.67*</td>
</tr>
<tr>
<td>Self-identity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Validation from others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.19*</td>
</tr>
</tbody>
</table>

* $p < .001$  NB: Weights are at the final step of the analyses
7.6 Discussion

The present research comprised a preliminary investigation of psychological factors influencing young people’s mobile phone behaviour. The study explored the relationship between frequency of mobile phone use and mobile phone involvement, people’s cognitive and behavioural interactions with their mobile phone. Additionally, the study explored the effect of self-identity and validation from others on frequency of mobile phone use and mobile phone involvement. A parsimonious measure of mobile phone involvement, the MPIQ, was developed. Preliminary evidence suggested that the MPIQ was a reliable measure for this initial investigation into the relationship between frequency of mobile phone use and mobile phone involvement and the predictors of these behaviours. Findings revealed that self-identity predicted frequency of mobile phone use whilst both self-identity and validation from others predicted mobile phone involvement. These results indicated that different psychological influences impact on each form of young people’s mobile phone behaviour.

Results in this study reveal that high frequency of mobile phone use differs from involvement with mobile phones as the association between frequency of use and MPIQ scores was relatively small (.30). Additionally, the predictors of each behaviour differed. This finding may be due, in part, to the way mobile phones are used. Measures of frequency of mobile phone use (including in this study) generally assess the number of times a day a person uses their phone for calls or text messages. As stated previously, many people check their phone for missed messages or calls without actually using it. Thus, measures of frequency of use may not adequately gauge the extent to which people are involved with their phones. To overcome this conceptual confusion, we
developed a mobile phone involvement questionnaire which included both the cognitive and behavioural aspects of mobile phone use. Participants in this study reported symptoms such as cognitive and behavioural salience, withdrawal, euphoria and tolerance to varying degrees. The findings in this study indicate that mobile phone involvement has some similarity to a behavioural addiction and is qualitatively different to the frequency or amount that people use their mobile phone. Therefore, mobile phone involvement appears to warrant investigation as a unique phenomenon.

Approximately 8% of participants in this study positively endorsed the majority of items in the MPIQ indicating that some Australian youth are so highly involved with their mobile phones that the technology is impacting on their daily functioning. Although symptoms in the MPIQ were based on behavioural addiction components, this finding does not necessarily indicate the presence of a new pathological condition but that some young people are demonstrating an excessive attachment to their mobile phone similar to the definition of a behavioural addiction (Orford, 2001). Further investigation is required to gauge the relationship between scores on the MPIQ and the extent of negative consequences, such as significant interruption to daily activities including work, driving, and sleep; anxiety when unable to use their phone; and problematic outcomes including inability to pay mobile phone bills; before stronger conclusions about any pathology can be made.

With respect to the influences on young people’s mobile phone behaviour, it was found that self-identity predicted both frequency of mobile phone use and mobile phone involvement in this study. These findings support previous research indicating that self-identity influences level of mobile phone use (Walsh & White, 2007) and behavioural
addictions (Koski-Jannes, 2002). In contrast, validation from others predicted mobile phone involvement but not frequency of use. Thus, whilst self-identification was an influential factor in determining both frequency of use and involvement with mobile phones, validation from others was only impactful on high involvement with mobile phones in this study. This finding supports claims that over-attachment to activities, as measured by involvement in this study, is related to the positive expectancies of behaviours and that psychological factors underlie addictive patterns of behaviour (Orford, 2001). Results in this study indicate that young people who reported high involvement with their mobile phone obtain feelings of validation from others (such as feeling valued, loved) suggesting that mobile phone use may be a way to enhance one’s self-esteem.

This link between validation from others and mobile phone involvement is particularly concerning for youth who are at a life stage in which they are developing their self and social identities (Arnett, 2004). Although feelings of connection and belonging promote self-esteem and enhance psychological well-being (Baumeister & Leary, 1995), if young people become reliant on the mobile phone for these positive outcomes, they may not develop alternate strategies (Loonis et al., 2000) to facilitate social connection and their ability to self-manage their self-esteem may be reduced. Thus, over time the benefits of positive feelings may be negated by a reliance on the device as the primary method to produce this outcome. As addictions which develop in adolescence often continue into adulthood (Piko, 2006), further research is required to understand fully the developmental trajectory of this newly identified pattern of behaviour.
Although the study comprised a novel approach to examine a young people’s mobile phone behaviour, there were a number of limitations that should be noted. It was not possible to explore the effect of all demographic factors, such as living environment, in this study. Youth who live at home are likely to be subjected to parental restrictions (Giles & Price, 2008; Mathews, 2004) which may impact on their mobile phone behaviour. Additionally, the majority of participants (83%) completed the questionnaire during testing sessions in schools and universities in Brisbane, Queensland. As youth are highly responsive to social pressures (Smetana et al., 2006) it may be that the presence of friends and peers influenced responses. Future research should adopt a data collection method that reduces the potential for response bias and broadens the participant pool to a wider community of Australian youth.

It should also be noted that the amount of variance in frequency of use explained by the predictors was relatively small (7%) with self-identity emerging as the only significant predictor. As the aim of this research was to provide a preliminary examination of psychological factors influencing young people’s mobile phone behaviour, only two predictors of these behaviours were explored. It is likely that other factors that were not included in this study may affect young people’s mobile phone use. Youth are developing their social networks and are highly responsive to normative pressures from friends and peers (Smetana et al., 2006) and thus, social influences, such as referent group norms, may influence young people’s mobile phone use. Additionally, validation from others was found to predict mobile phone involvement suggesting that people for whom approval from others is important may be more likely to develop a reliance on the mobile phone. It is possible, then, that young people low in self-esteem
or with a strong need for attachment to others may be most at risk of developing a pattern of behaviour similar to an addiction. Future research could include specific measures of self-esteem, social identification, and relevant behavioural motivations, such as belonging, to compare which factors are most impactful on young people’s mobile phone behaviour.

Overall, this study provided a preliminary examination of the psychological underpinnings of young people’s mobile phone behaviour. A small, but significant, relationship was found between frequency of mobile phone use and mobile phone involvement, with mobile phone use increasing as involvement increased. Importantly, however, different factors influenced each behaviour. Whilst self-identification predicted both frequency of use and mobile phone involvement, validation from others only predicted youth’s involvement with their mobile phone. The results of this study suggest that it is young people for whom mobile phone use positively reinforces their self-concept and who perceive they are valued by others, based on their mobile phone contact, who are most likely to become highly involved with this communication technology tool. Given the prevalence of this behaviour, particularly amongst Australian youth, and the problematic outcomes becoming more evident, it is important that the psychological factors underlying this pre-dominant behaviour are understood.
CHAPTER 8: KEEPING IN CONSTANT TOUCH: THE PREDICTORS OF YOUNG AUSTRALIANS’ MOBILE PHONE INVOLVEMENT

8.1 Notes

This paper is reproduced from:


The candidate is first author on this submitted paper and was responsible for all aspects of manuscript preparation including: reviewing the literature; developing the rationale for the research; designing the primary measure; organising and conducting data collection; analysing and interpreting the data; and writing the manuscript. The second and third authors are members of the candidate’s supervisory team and their contribution has been supervisory in nature. All co-authors provided permission for this paper to be included in this PhD dissertation.

This paper will be submitted for publication to a peer reviewed international journal.

The data collection instruments used in the study reported in this paper are contained in Appendix C.
8.2 Abstract

Mobile phone use, especially amongst young people, has become a prevalent behaviour. Noted benefits include easy contactability, convenience, and emergency use. However, potential disadvantages, such as debt and dangerous use (such as when driving) are becoming more evident. Therefore, it is important to examine the psychological underpinnings of this behaviour. In the present research, 292 young Australians, aged between 16 and 24 years, completed an on-line survey assessing the effects of demographic factors, self-identity, ingroup norm, the need to belong, and self-esteem on their frequency of mobile use and mobile phone involvement, conceptualised as people’s degree of cognitive and behavioural association with their mobile phone. The results of structural equation modelling found that age (younger) and self-identity significantly predicted the frequency of young people’s mobile phone use. In contrast, age (younger), gender (female), self-identity, ingroup norm, and the need to belong predicted young people’s involvement with their mobile phones. The role of self-esteem on mobile phone involvement was mediated by participants’ need to belong. The present study contributes to our understanding of this phenomenon and provides preliminary evidence of the factors influencing young people’s mobile phone behaviour.
8.3 Introduction

Since their introduction over 20 years ago, mobile phones have become a highly prevalent communication device. In Australia and other industrialised nations, it is the youth cohort that has adopted mobile phones as an integral part of their daily lives. Young Australians are more likely than any other demographic group to use their mobile phones to communicate with others by calling and text messaging and also to use their mobile phones for non-communication purposes, such as for downloading music, as a camera, and for accessing the internet to watch sport (Access Economics, 2008; Australian Communications and Media Authority [ACMA], 2007). The popularity of this technological device is no doubt due, in part, to the numerous practical and psychological benefits arising from mobile phone use including enhanced connectivity facilitating social inclusion (O. Peters & ben Allouch, 2005; Wei & Lo, 2006); feelings of safety due to rapid contactability should an emergency occur (Carroll et al., 2002; Pain et al., 2005); and enabling workers to remain contactable by employers and clients (Eost & Flyte, 1998). In addition to the acknowledged benefits of mobile phone use, however, young people’s involvement with their mobile phones is leading to some problematic outcomes. For instance, the presence and use of mobile phones in schools and other educational institutions is disruptive and reduces students’ attention in class (Hiscock, 2004; Selwyn, 2003); debt from mobile phone use is an increasing problem for many young people, leading to financial hardship and, in some cases, bankruptcy (Australian Communications Authority, 2004a; Griffiths & Renwick, 2003); and young people frequently use mobile phones while driving, a widely acknowledged unsafe driving practice (Pennay, 2006; Walsh, White, Hyde et al., 2008a). Thus, there is a need
to determine the factors influencing young people’s high mobile phone involvement to gain an understanding of the reasons underlying potentially concerning patterns of mobile phone behaviour.

Previous mobile phone research has primarily assessed the frequency that people use their mobile phones for calling and text messaging. However, these measures are typically unreliable with people either over- or under-estimating their actual level of use when compared to their calling records (A. A. Cohen & Lemish, 2003). Additionally, as noted earlier, using a mobile phone for non-communication behaviours, such as downloading music, is becoming more widespread (ACMA, 2007). Thus, frequency of use measures alone may not adequately gauge the extent to which people interact with their mobile phones. In addition to using the mobile phone for non-communication activities, it has been found that some people are cognitively pre-occupied with their phone when not using it. For instance, young people report thinking about their mobile phone when not using it, being distracted from other tasks when they have their phone with them, and also keeping the phone prominently on display so that the phone is constantly in their awareness (Walsh & White, 2006; Walsh, White, & Young, 2008b). These activities indicate that some mobile phone behaviour incorporates both cognitive and behavioural aspects, conceptualised by Walsh, White et al. (2008a) as mobile phone involvement.

Walsh, White et al. (2008a) posit that mobile phone involvement represents a person’s cognitive and behavioural association with their mobile phone. By encapsulating the cognitive, such as the extent to which a person thinks about their mobile phone when not using it, and behavioural, such as constantly checking the
Mobile phone involvement

Mobile phone for missed messages or calls, aspects of mobile phone behaviour, mobile phone involvement, is broader construct than frequency of use measures. Mobile phone involvement is similar to a behavioural addiction but without pathologising consequences. Nevertheless, characteristics of addiction are posited to underlie mobile phone involvement and form the foundation of the Walsh, White et al.’s (2008a) measurement tool and for the investigation of young people’s mobile phone behaviour in the present research.

Recently, symptoms of addiction have been incorporated into measures of problematic (Bianchi & Phillips, 2005), compulsive (James & Drennan, 2005), heavy (Jenaro et al., 2007), intensive (Sanchez-Martinez & Otero, 2008) and indicators of addictive (Ehrenberg et al., 2008; Walsh, White, & Young, 2007) mobile phone use. However, conceptual and methodological issues have been identified in some of these studies. For instance, Bianchi and Phillips’ (2005) measure of problematic mobile use included items assessing social influences, such as how much friends used a mobile phone, which may have confounded results. In their study, Jenaro et al. (2007) categorised mobile phone over-use as a pathological behaviour, a classification which may be premature. Although negative outcomes have been associated with mobile phone use, it is not yet clear that these outcomes are severe enough to the behaviour being diagnosed as a pathological condition. The remainder of the studies have either been qualitative (Walsh, White, & Young, 2008b); have not reported scale items (Sanchez-Martinez & Otero, 2008); or have assessed some, but not all, of the proposed indicators of addiction (Ehrenberg et al., 2008; Walsh, White, & Young, 2007). These studies, however, provide an important indication that it is younger mobile phone users
who are most likely to engage in a pattern of mobile phone behaviour which may resemble an addiction (Orford, 2001). For this reason, this study focussed on a youth cohort. Additionally, these studies indicate that people with symptoms of addiction are more likely to engage in problematic and inappropriate mobile phone use (Bianchi & Phillips, 2005; James & Drennan, 2005; Walsh, White, & Young, 2008b). As people who are highly involved with their mobile phone are likely to have a strong cognitive (e.g., thinking about the mobile phone) and behavioural (e.g., prioritising mobile phone use over other activities) associations with their phone, similar to symptoms gauged in measures of addiction, it may be that these people are more likely to develop concerning patterns of behaviour, for example using the phone while driving or inappropriate use when at work.

In addition to identifying that younger users are most likely to be highly involved with their mobile phones and to engage in concerning patterns of behaviour, a number of studies have also indicated that internal and external factors, such as self and social influences respectively, impact on young people’s mobile phone behaviour. For instance, it has been argued that mobile phones are a form of self-expressive identity (Mannetti et al., 2002; Walsh & White, 2007) and that some users have incorporated mobile phones into their sense of self (Srivastava, 2005). Additionally, important others affect young people’s frequency of mobile phone use and also their type of mobile phone use (Srivastava, 2005; Walsh, White, & Young, 2008c) suggesting that social influences, in particular ingroup norms (how much a behaviourally relevant reference group engages in the activity), impact on mobile phone behaviour. Finally, some young mobile phone users report having a mobile phone increases their sense of self-worth as
they feel connected to others (Walsh, White, & Young, 2008c; Wei & Lo, 2006). Thus, psychosocial motivations, such as self-esteem enhancement and the need to belong, may also underlie young people’s mobile phone behaviour. As yet, however, there has been little empirical investigation of the role of these internal and external factors on young people’s mobile phone behaviour. Given the pre-dominantly social nature of mobile phone use, the present research drew on major concepts in social psychology to develop a preliminary understanding of the role of psychosocial factors in determining young people’s mobile phone behaviour. Specifically, the research assessed the effect of self-identity, ingroup norm, self-esteem, and the need to belong on young people’s mobile phone behaviour.

8.3.1 Self-identity

According to identity theory, self-identity is formed when externalised roles and behaviours and internal characteristics such as goals, moral concerns, values, and affective components, become incorporated into the self-concept (Gergen, 1971; Stryker, 1987). In particular, positive outcomes and social reinforcement increase the potential for behaviours to become integrated into an individual’s self-identity (McCall & Simmonds, 1978; Stryker, 1987). One method that people use to express their self-identity is by the ownership and use of material objects (Dittmar, 2004a), particularly objects which can be individualised to reflect their self-concept (Belk, 1988; Prentice, 1987). In addition to providing practical benefits, material objects can represent social status, personality, and a person’s attitudes and values increasing the likelihood that such objects will become an integral part of self (Dittmar, 1992, 2004a). Young people are most likely to seek out material objects which both symbolise their identity and
enhance their emotional state (Dittmar, 2005). In addition to using objects as a means to express identity, objects can become a part of self-identity by regular behavioural enactment. Role identity theorists argue that continued performance of a behaviour leads to the activity becoming an entrenched part of our sense of self (Stryker, 1987). Activities which are highly salient are most influential on the self-concept and are subsequently integrated into an individual’s self-identity (Gergen, 1971).

As discussed previously, mobile phones are a highly salient part of many young people’s daily lives suggesting that being a mobile phone user is an important part of many young people’s self-identity. Additionally, young people personalise their mobile phones with unique ring-tones and screen-savers (e.g., Baron & Ling, 2007; Goggin, 2006; Katz & Sugiyama, 2005) and believe mobile phones symbolise their growing independence from their parents (Ling, 1999) and the development of their individual sense of self (Campbell & Yong, 2008). The adoption of mobile phones as a form of self-expressive identity within this cohort influences both type and frequency of mobile phone behaviour (Mannetti et al., 2002; Walsh & White, 2007) and suggests that mobile phones have become a materialistic representation of the self (Dittmar, 2004a). Thus, a number of processes appear to have led to mobile phones becoming a valued part of young people’s self-identity such that some young mobile phone users cannot imagine life without their mobile phone and view their mobile phone as an appendage (Walsh, White, & Young, 2008b).

Self-identity can predict frequency of mobile phone use (Walsh & White, 2007; Walsh, White, & Young, 2008a) and high involvement with mobile phones amongst Australian youth (Walsh, White, & Young, 2008a). However, in addition to
understanding the role of self-identity on mobile phone behaviour, it is important to assess the impact of self-identity in conjunction with other potential influences on young people’s mobile phone behaviour. Adolescents and young adults are at a life-stage in which they are developing their identity in a wider social context (Smetana et al., 2006) with the influence of their friends and peers leading to performance of potentially addictive behaviours (Orford, 2001; Piko, 2006). Thus, social influences, such as ingroup norms, are also likely to impact on young people’s mobile phone behaviour.

8.3.2 **Ingroup Norms**

According to the social identity theory/self-categorisation perspective, a person’s behaviour is related to their connection to various social groups (Hogg & Abrams, 1988; Turner, 1991). Social identity theory posits that the self is socially constructed with salient group memberships becoming incorporated into a person’s identity. By monitoring and evaluating the processes within the group, people form evaluations about their role within the group and their place in the group hierarchy. When people feel they are a valued member of groups they are motivated to incorporate shared intra-group characteristics into their self-concept so that they conform to group standards. Ingroup norms subsequently become the reference point for beliefs, attitudes, and behaviours as people seek to act in a manner congruent with their friends and peers (Hogg & Abrams, 1988; Turner, 1999). Whilst social influence is most likely to influence behaviour under conditions when the group is present, internalisation of perceived norms is believed to influence behaviour in contexts removed from the group presence (Ellemers et al., 2002) particularly when the group is highly salient (White et
Mobile phone involvement and use is highly prevalent amongst youth and, as such, may be a salient and normative part of group membership. However, the frequency of mobile phone use varies greatly within this cohort with some young people engaging in highly frequent use whilst others engage in minimal use (Spin Sweeney, 2004; Walsh & White, 2006). As young people, in particular, are influenced by the behaviour of other group members (Smetana et al., 2006), it may be that the commonality of use among referent group members impacts on a young person’s mobile phone behaviour. Mobile phones provide constant connection to others potentially increasing the psychological relationship that people have with their friends and peers (Walsh, White, & Young, 2008c; Wei & Lo, 2006). As such, ingroup norms may be a particularly important influence on mobile phone behaviour in this cohort. Although the link between social identity processes and mobile phone use is yet to be established empirically, Cassidy (2006) argues that mobile phone use is becoming a positively viewed behaviour within young people’s social groups and that this perception is influencing the uptake and frequency of mobile phone use by young people. Additionally, young people have reported that normative influences impact on the purchase of their mobile phone and that group behaviour dictated, in part, which type of mobile phone use (calling or text messaging) became their preferred communication method (Walsh, White, & Young, 2008c). Thus, ingroup norms appear to be related to young people’s mobile phone behaviour and, as such, will be explored further in this study. In addition to maintaining group memberships, young people actively seek out
new relationships which enhance their psychological well being (Smetana et al., 2006). Thus, social motivations may also influence young people’s mobile phone behaviour.

8.3.3 Social Motivations: Belonging and Self-esteem

Behavioural motivations arise from a complex interaction of the individual’s needs, desires and concerns, contextual and situational variables, and stimulus attributes (Pittman, 1998). People actively choose why, when, and how to behave according to the reason for the behaviour (Higgins et al., 1986; Ruggiero, 2000). Motivations guide people to seek out the most effective device or behaviour to meet a specific need (Higgins et al., 1986; Pittman, 1998). Social motivations, in particular, influence an individual’s social behaviour (see Fiske, 2002).

Although there are five commonly agreed social motives, shared understanding; control, trust, self-enhancement (or maintaining self-esteem), and belonging (Fiske, 2004), it can be argued that the two most relevant to mobile phone use are belonging and self-esteem. Belonging, a need for strong stable interpersonal relationships (Baumeister & Leary, 1995), is posited to be the most fundamental social motivation as it underpins the other four motives (see Fiske, 2002). To enhance belonging, people seek out frequent contact with others and cultivate personal relationships so that they feel connected to, and valued by, other people (Baumeister & Leary, 1995). Belonging is posited to promote self-esteem and psychological well-being whilst a lack of belonging is related to poor mental health and low self-esteem (Baumeister, 1991).

Self-esteem, or an individual’s perception of their value or worth as a person, is important for overall psychological health, resilience and coping (Baumeister et al., 1989; Rosenberg, 1965). Young people’s self-esteem is often related to their
relationships with, and feedback from, friends and peers (Arnett, 2004; Rosenberg, 1965) particularly if their self-worth is contingent on approval from others (Crocker & Wolfe, 2001). As mobile phones are valued for providing connection to others, self-esteem may impact on young people’s mobile phone behaviour. To date, however, investigations of the effect of self-esteem on mobile phone use have produced mixed results. Whilst some authors found that low self-esteem predicted problematic (Bianchi & Phillips, 2005) and excessive mobile phone use (Ha et al., 2008), other authors found no relationship between self-esteem and amount of mobile phone use (Butt & Phillips, 2008; Ehrenberg et al., 2008; Phillips et al., 2006) or mobile phone addictive tendencies amongst youth (Ehrenberg et al., 2008). Thus, the relationship between self-esteem and mobile phone behaviour remains unclear. It may be, however, that rather than directly influencing mobile phone behaviour, the effect of self-esteem on mobile phone use is mediated by one’s need to belong.

A relationship between belonging and self-esteem, in the context of mobile phone use, was revealed in a study investigating ostracism from text message conversations (A. Smith & Williams, 2004). Participants who were excluded from SMS conversations reported reduced levels of belonging and lower self-esteem (A. Smith & Williams, 2004). This trend has also been found when young people perceive that they are not being included in contact between members of their social group (T. Charlton et al., 2002). As low self-esteem is believed to result in a stronger need to belong (Baumeister & Leary, 1995), these findings suggest that the effect of self-esteem on young people’s mobile behaviour may be mediated by the need to belong. The present research explored these relationships to further our understanding of the interaction
between self-esteem and need to belong in the context of young people’s mobile phone behaviour.

8.3.4 The Present Research

Although there is a growing body of mobile phone research conducted from a psychological perspective, our understanding of social psychological factors underpinning young people’s mobile phone behaviour is limited. As problematic outcomes of mobile phone use (e.g., debt, accidents from use while driving, disruption to social environments) are becoming more evident, there is a need to identify the characteristics of those people who may develop an over-involvement with their mobile phone. The present research, then, sought to improve our understanding of the psychological variables influencing young Australians’ mobile phone behaviour by developing a model to represent the psychosocial predictors of both the frequency of mobile phone use and mobile phone involvement amongst youth. Specifically, the research assessed the effect of self-identity, ingroup norm, self-esteem, and the need to belong on both young people’s frequency of mobile phone use and mobile phone involvement which represents a person’s cognitive and behavioural association with their mobile phone (Walsh, White, & Young, 2008a). Although the research was exploratory in nature, the following hypotheses were proposed:

It was expected that self identity, ingroup norm, and need to belong would each predict frequency of mobile phone use and mobile phone involvement respectively (Hypothesis 1). Specifically, it was believed that young people who reported high levels of self-identity, ingroup norm, and the need to belong would be more likely to use their phone more frequently and report a higher degree of involvement with their mobile
phone. It was proposed also that a negative relationship would be found between self-esteem and the need to belong with young people who reported low self-esteem being more likely to report a stronger need to belong (Hypothesis 2). Finally, in an exploratory manner, it was expected that the effect of self-esteem on young people’s frequency of mobile phone use and the degree of their mobile phone involvement would by mediated by the need to belong (Hypothesis 3).

In addition to including psychological variables in the model, the demographic factors of age, gender, and mobile phone payment method were assessed to explore, and control for, the effect of these factors on young people’s mobile phone behaviour. Explicit hypotheses were not formulated in relation to these demographic variables. In the first test of the proposed model, paths were specified between these demographic factors and the outcome measures of frequency of mobile phone use and mobile phone involvement to test for any direct effects.

8.4 Method

8.4.1 Design

The study was a cross-sectional design with participants completing an online self-report survey. The outcome measures were frequency of mobile phone use and mobile phone involvement. The predictor variables were self-identity, ingroup norm, need to belong, self-esteem, age, gender, and payment method.

8.4.2 Participants and Procedure

Prior to commencement of the study, ethical approval was obtained from the university’s Human Research Ethics Committee. An online survey was developed using a freely available online assessment tool. Participants were recruited by posting
information on various online youth news-lists, and sending emails to youth organizations, high schools and universities throughout Australia for distribution to their members and students. The online postings and emails explained the purpose of the study and provided a link to a website specifically created for the research project. The front page of the website outlined the study and included age screening criterion (“Are you aged between 16 and 24 years?”) Participants who answered ‘yes’ to the screening criterion were then able to access the survey site whilst potential participants who answered ‘no’ to the screening criteria were thanked for their interest and were unable to proceed further.

Upon completion of the survey, participants were directed to another website where they provided their contact details in order to be entered into a draw to win one of five $20 (AUD) shopping vouchers. To protect participants’ anonymity, this data file was unable to be linked to the data file containing their survey responses. All contact details were deleted once the prize draw was conducted.

In total, 303 participants entered the survey site. However, as the primary data analysis technique, structural equation modelling, is not effective with missing data, 11 cases with missing data were removed. In total, data from 292 (males 30%, females 70%) Australian youth aged between 16 and 24 years (M = 20.22, SD = 2.50) were analysed. Youth from all states in Australia took part in the study.

8.4.3 Measures

The questionnaire assessed demographic information, frequency of mobile phone use, mobile phone involvement, self-identity, ingroup norm, need to belong, and
self-esteem. Reversed items were included throughout the questionnaire to overcome the potential for response bias.

8.4.3.1 Demographics

Participants selected their age, gender, and mobile phone payment method (pre-paid versus not pre-paid) from pre-determined categories.

8.4.3.2 Frequency of Mobile Phone Use

Participants indicated the average number of calls made, calls received, text messages read, and text messages received each day in four open-ended questions. These items were then summed to create a scale reflecting the average frequency of use per day ($\alpha = .68$).

8.4.3.3 Mobile Phone Involvement Questionnaire (MPIQ)

The eight-item Mobile Phone Involvement Questionnaire developed by Walsh, White et al. (2008a) assessed participants’ cognitive and behavioural association with their mobile phone. Based on Brown’s (1997) behavioural addiction components and qualitative descriptions of mobile phone behaviour (Walsh, White, & Young, 2008b), the MPIQ includes items measuring withdrawal, cognitive and behavioural salience, euphoria, loss of control, relapse and reinstatement, conflict with other activities, and interpersonal conflict, specifically worded to relate to mobile phone behaviour. Example items are “I often think about my mobile phone when I am not using it”, “Arguments have arisen with others because of my mobile phone use”, and “I lose track of how much I am using my mobile phone”. Items were scored 1 strongly disagree to 7 strongly agree. Summing and averaging the items resulted in a moderately reliable scale ($\alpha = .80$).
8.4.3.4 Self-identity

Three items adapted from Terry, Hogg and White (1999) assessed self-identity, or the value of a behaviour to a person’s self-concept, in the context of mobile phone use. Items included “Being a mobile phone user is an important part of who I am”, scored from 1 *strongly disagree* to 7 *strongly agree*. A moderately reliable scale ($\alpha = .81$) was formed by summing and averaging the items.

8.4.3.5 Ingroup norm

Two items (adapted from Terry & Hogg, 1996) assessed ingroup norm, or the level to which a behaviourally relevant reference group performs the behaviour. An example item is “Mobile phone use is common amongst my friends and peers”; scored 1 *strongly disagree* to 7 *strongly agree*. Items were summed and averaged forming a moderately reliable scale ($\alpha = .80$).

8.4.3.6 Need to Belong Scale

The 10-item Need to Belong Scale developed by Leary et al. (Leary, Kelly, Cottrell, & Schreindorfer, 2007) assessed the strength of people’s desire for relationships with others, for example “I need to feel that there are people I can turn to in times of need”; scored 1 *not at all* to 5 *extremely*. Items were summed and averaged to form a moderately reliable measure ($\alpha = .74$).

8.4.3.7 Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale (1965), a 10-item measure, assessed global self-esteem. An example item is “On the whole, I am satisfied with myself”; scored 1 *strongly disagree* to 4 *strongly agree*. Items were summed to form a reliable scale ($\alpha = .89$).
Prior to the commencement of data analysis, reversed items which were included to reduce response bias were subsequently recoded so that all scale items were in the same (positive) direction. Additionally, the open-ended responses in the frequency of use measures were converted to numerical data (e.g., four = 4). Descriptive statistics were obtained for participants’ demographic information and their self-reported level of mobile phone use. Bivariate correlations were performed to assess the overall relationships between the variables in the study. Path modelling using AMOS 6 was then employed to assess the relationships between the predictor variables and the outcome measures.

The specified model included two outcome measures as co-variates, frequency of mobile phone use and mobile phone involvement (see Figure 8.1), to enable the relationships between the predictors and both outcome variables to be assessed in the one analysis. Model parameters were estimated by the maximum likelihood method and a number of indicators were used to assess the fit of the model. For a satisfactory fit, the chi-squared test should be non-significant and the chi-square statistic should not be more than three times the degrees of freedom (CMIN/DF) (Kline, 2005). Additional indices used to evaluate the model fit were the Comparative Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA). For a moderate model fit, the CFI should be above .90 and the RMSEA below .08 (Marsh, Balla, & Hau, 1996). The predictive ability of the model was evaluated by inspecting the path coefficients and $R^2$ values.
8.5 Results

8.5.1 Descriptive Statistics

Examination of data revealed that young people were more likely to send ($M = 13.29$, $SD = 20.33$) and receive ($M = 13.12$, $SD = 20.61$) text messages than to make ($M = 2.41$, $SD = 2.28$) or receive ($M = 2.76$, $SD = 2.28$) voice calls. The type of mobile phone payment method was fairly evenly split with 54.1% using pre-paid methods with the remainder of participants (46.9%) paying following use.

As shown in Table 8.1, participants’ self-identification as mobile phone users was average. In contrast, mobile phone use was reported to be a highly common behaviour among participants’ friends and peers. The levels of self-esteem and belongingness needs reported by participants in this study were both reasonably high. Although the overall frequency of mobile phone use was relatively high and varied widely, this variation in young people’s mobile phone use is consistent with Australian mobile phone data (ACMA, 2008a).

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3 In addition to the frequency of daily use measure, separate scales were also developed for average daily level of inbound use (calls and text messages received), outbound use (calls made and text messages sent), calls only (both made and received) and text messages only (sent and received). Separate analyses using each of these scales were conducted to identify whether results differed according to type of mobile phone use. Results of these analyses were consistent with the results from the overall combined measure of daily frequency of mobile phone use. For this reason results for overall frequency of use only are reported in this study.
Table 8.1

*Means, Standard Deviations, and Range of Study Variables*

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
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<tr>
<td>Self-identity</td>
<td>3.52</td>
<td>1.53</td>
<td>1 - 7</td>
</tr>
<tr>
<td>Ingroup norm</td>
<td>6.36</td>
<td>0.86</td>
<td>1 - 7</td>
</tr>
<tr>
<td>Need to belong</td>
<td>3.52</td>
<td>1.54</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>2.98</td>
<td>0.53</td>
<td>1 - 4</td>
</tr>
<tr>
<td>Frequency of mobile phone use</td>
<td>31.44</td>
<td>45.44</td>
<td>0 - 150</td>
</tr>
<tr>
<td>Mobile phone involvement</td>
<td>3.60</td>
<td>1.14</td>
<td>1 - 7</td>
</tr>
</tbody>
</table>

8.5.2 Correlations between Variables

As shown in Table 8.2, correlations between study variables ranged from minimal to moderate. A small, but significant, positive relationship was revealed between the outcome measures of frequency of mobile phone use and mobile phone involvement, $r = .36, p < .01$. Thus, although frequency of use is somewhat related to mobile phone involvement, they appear to be separate constructs. This finding supports the use of two co-varied dependent variables in the model for the predictive analyses. Only age and self-identity were correlated with frequency of use, whilst all of the other predictors, apart from plan type, were correlated with mobile phone involvement. Self-identity was the strongest correlate for both frequency of use and mobile phone involvement.
Table 8.2

*Bivariate Correlations, Means, and Standard Deviations for Study Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>_</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Gender</td>
<td></td>
<td>.13*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Plan type (pre-paid vs not)</td>
<td>.28**</td>
<td>- .09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Self-identity</td>
<td>.02</td>
<td>.06</td>
<td>.13*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. In-group norms</td>
<td>.03</td>
<td>.03</td>
<td>.12*</td>
<td>.21**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Need to belong</td>
<td>-.01</td>
<td>.06</td>
<td>.00</td>
<td>.30**</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Self-esteem</td>
<td>.08</td>
<td>-.10</td>
<td>.11</td>
<td>-.06</td>
<td>.09</td>
<td>-.30**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Frequency of mobile phone use</td>
<td>-.26**</td>
<td>.02</td>
<td>-.01</td>
<td>.20**</td>
<td>.02</td>
<td>.09</td>
<td>-.05</td>
<td></td>
</tr>
<tr>
<td>9. Mobile phone involvement</td>
<td>-.21**</td>
<td>.12*</td>
<td>.03</td>
<td>.59**</td>
<td>.28**</td>
<td>.28**</td>
<td>-.15*</td>
<td>.36**</td>
</tr>
</tbody>
</table>

*p < .05, **p < .001.
8.5.3 Assessing the Model Fit

Structural equation modelling was employed to test the hypothesised relationships between the predictor variables and the outcome measures, frequency of use, and mobile phone involvement. As shown in Figure 8.1, age, gender, plan type, self-identity, ingroup norm, and need to belong were specified as the direct predictors of both frequency of mobile phone use and mobile phone involvement. Additionally, a mediated pathway between self-esteem and the outcome measures was specified with the effect of self-esteem predicting the need to belong which subsequently influenced frequency of mobile phone use and mobile phone involvement. As frequency of use and mobile phone involvement were correlated, the error residuals of the two dependent variables were allowed to co-vary.
The initial model did not fit the data well ($\chi^2 (22) = 97.72, p < .001$, CMIN/DF = 4.44, CFI = .76, RMSEA = .11). A significant path ($p < .001$) was found between the outcome measures of frequency of use and mobile phone involvement, confirming a relationship between these two constructs. Inspection of the modification indices revealed that including paths allowing age and payment method; need to belong and self-identity; and ingroup norm and self-identity to co-vary would significantly improve model fit. The model was then re-specified to include these additional paths (Figure 8.2). Analysis revealed the second model was a good fit to the data ($\chi^2 (19) = 35.98, p <$
Mobile phone involvement

.05, CMIN/DF = 1.89, CFI = .95, RMSEA = .06) with no changes suggested in the modification indices. The final model explained 12% of the variance in frequency of mobile phone use ($R^2 = .12$) and 44% of the variance in mobile phone involvement ($R^2 = .44$).

* $p < .05$, ** $p < .01$, *** $p < .001$.

Note: Non-significant pathways have been removed.

*Figure 8.2.* Final model fitted to the data for predicting frequency of mobile phone use and mobile phone involvement ($N = 292$)
Inspection of the second model revealed that there was a significant co-varied relationship between age and payment method with younger people being more likely to pre-pay for their mobile phone use. There were also significant positive co-varied relationships between both need to belong and self-identity; and ingroup norm and self-identity. Thus, self-identity was higher when participants perceived their friends and peers used a mobile phone or when participants had a strong need to belong. A significant negative relationship was found between self-esteem and need to belong indicating that people with lower self-esteem were more likely to have a higher belongingness need.

8.5.4 The Direct Predictors of Frequency of Use and Mobile Phone Involvement

As shown in Figure 8.2, there were differences in the direct predictors of frequency of use and mobile phone involvement. Age and self-identity were the only significant direct predictors of frequency of use with younger people and people with higher self-identity engaging in more frequent mobile phone use. All other paths were non-significant.

With respect to mobile phone involvement, the majority of predictors; age, gender, self-identity, ingroup norms, and the need to belong; had significant direct effects on mobile phone involvement. Thus, younger people, females, people who had incorporated mobile phone use into their self-identity, who perceived mobile phone use to be common amongst their friends and peers, and people with a strong desire for relationships with others were likely to report high involvement with their mobile phones. Self-identity was the most significant predictor of both frequency of use and involvement. Payment method did not significantly predict either outcome measure.
8.5.5 Mediation Analysis

As need to belong significantly predicted mobile phone involvement and a small but significant correlation was found between self-esteem and need to belong ($r = -.28$, $p < .001$), the hypothesis that the effect of self-esteem on mobile phone involvement would be mediated by the need to belong was tested. A bootstrapping procedure requesting 1000 samples was employed to check for significance of the indirect path. In order to confirm mediation, the standardised indirect effect of self-esteem on mobile phone involvement (-.029) was required to be between the lower and upper bound ranges (-.063 and -.006, respectively) of the bootstrapped sample (Shrout & Bolger, 2002). This mediated pathway was significant, $p < .01$. Thus, the effect of self-esteem on mobile phone involvement was mediated via the need to belong, such that young people with low self-esteem are more likely to reported a stronger need to belong which subsequently impacts on their level of mobile phone involvement.

8.6 Discussion

The present research aimed to improve our understanding of psychosocial factors influencing young people’s mobile phone behaviour by exploring the effect of self-identity, ingroup norm, need to belong, self-esteem, and demographic factors on the frequency of mobile phone use and mobile phone involvement amongst Australian youth. Results revealed that frequency of mobile phone use and mobile phone involvement are related, but separate, constructs and differences were identified in the predictors of each behaviour. Specifically, age (younger) and self-identity significantly predicted young people’s frequency of mobile phone use whilst age (younger), gender (female), self-identity, ingroup norm, and need to belong all significantly influenced
their level of involvement with their mobile phones. Additionally, the effect of self-esteem on mobile phone involvement was mediated by participants’ need to belong to others. As mobile phone involvement encapsulates both the cognitive and behavioural aspects relating to mobile phones, these results indicate that different psychological process underpin how frequently people use their mobile phone and how involved they are with their phone. These results provide useful information in relation to the characteristics of those young people most likely to become highly involved with their mobile phone.

Three hypotheses were tested in the study. First, it was expected that self-identity, ingroup norm, and need to belong would each predict young adults’ frequency of mobile phone use and mobile phone involvement respectively. Partial support was found for this hypothesis. Self-identity predicted both frequency of mobile phone use and mobile phone involvement, whereas ingroup norm and need to belong were only impactful on young people’s level of involvement with their mobile phone. Thus, it is those people who perceive that mobile phone use is an integral part of who they are who are more likely to engage in frequent use and to report being highly involved with their phone. These findings support previous research which found self-identity was associated with mobile phone behaviour (Mannetti et al., 2002; Walsh & White, 2007; Walsh, White, & Young, 2008a) and that valuing material objects as a part of self-identity affects behaviour (Dittmar, 2005). In addition to impacting on both aspects of mobile phone behaviour, self-identity was the most strongly weighted predictor of both frequency of use and mobile phone involvement in this study.
The strength of self-identity as a predictor may also be due to the finding that both ingroup norm and the need to belong influenced self-identification as a mobile phone user. Participants who reported a stronger belongingness need, or who reported that mobile phone use was common within their friendship group, were more likely to identify strongly as a mobile phone user than participants low in belonging or whose friends did not use a mobile phone as commonly. These findings are consistent with identity theories which posit that socially reinforced behaviours which produce a positive outcome are likely to become entrenched in a person’s self-identity (Gergen, 1971; Stryker, 1987). The strength of self-identity as a predictor of both frequency of mobile phone use and mobile phone involvement amongst young people suggests that mobile phone use has become an intrinsic part of some young people’s self-concept, so much so that they are behaving in a manner similar to a behavioural addiction (Dittmar, 2004a). This may create difficulties in designing strategies to reduce young people’s problematic mobile phone use. People who identify strongly with a behaviour are less likely to reduce behavioural performance even if negative outcomes result (Koski-Jannes, 2002). Encouraging young people to discover a wider sense of self-identity (e.g., from values, additional interests) beyond being a mobile phone user may be effective in overcoming some of the concerning patterns of mobile phone behaviour (e.g., use when driving) developing among young people.

As well as influencing self-identity, ingroup norm and the need to belong directly influenced young people’s mobile phone involvement, but not frequency of use. Thus, young people who perceive that mobile phone use is a common behaviour amongst their friends and peers and who have a strong desire for relationships with other
people are more likely to become highly involved with their mobile phone in a manner which is similar to a behavioural addiction. These results support social identity theorists who posit that a person’s behavioural performance is influenced by the behaviour of referent group members (Hogg & Abrams, 1988; Turner, 1991; Turner et al., 1987) and also support Orford’s (2001) argument that social factors influence the development of addictive patterns of behaviour. The finding that the need to belong directly influenced mobile phone involvement indicates that some young people rely on the mobile phone to maintain or increase their sense of social inclusion. This trend could have concerning implications for young people’s social development. As addictive patterns of behaviour develop, the range of alternate activities performed to produce positive outcomes narrows (Loonis et al., 2000). Additionally, mediated communication has been found to replace face to face contact for some people (Joinson, 2004). Thus, it is possible that young people who are highly involved with their mobile phone may rely almost exclusively on the phone for their contact with others and may not develop other avenues for social connection.

The second hypothesis that self-esteem and the need to belong would be negatively related was supported in this study. Consistent with belongingness research (Baumeister & Leary, 1995; Leary et al., 1995), the results of the present research revealed that low self-esteem was related to a high need to belong. It was also predicted that the effect of young people’s self-esteem on the frequency of their mobile phone use and their mobile phone involvement would by mediated by their need to belong (Hypothesis 3). There was partial support for this hypothesis as young people’s need to belong influenced their level of mobile phone involvement, but not their frequency of
mobile phone use. The mediated relationship between self-esteem and mobile phone involvement revealed in this study may explain why some previous research has not found a direct effect of self-esteem on amount of mobile phone use (Butt & Phillips, 2008; Phillips et al., 2006) or mobile phone addictive tendencies (Ehrenberg et al., 2008). Results in this study reveal that there may be a more complex process occurring in which self-esteem influences the need to belong which subsequently impacts on young people’s involvement with their mobile phone. Thus, these findings suggest that young people who feel unworthy have a strong desire for attachment to others, most probably to enhance their feeling of self-worth, and are likely to become highly involved with their mobile phone.

Youth are transitioning through a developmental life-stage in which they are developing strategies to support psychological well-being throughout adulthood with self-esteem being particularly important for resilience and good mental health (Carbonell, Reinherz, & Giaconia, 1998). Additionally, young people are developing their sense of identity and patterns of behaviour which will continue through adulthood (Arnett, 2004). It may be that young people who use a technological device to enhance their sense of self-worth develop fewer internal mechanisms to maintain their self-esteem over time. Encouraging young people to see the mobile phone as a tool for communicating with others, rather than relying on it as a method of receiving positive reinforcement from others, may assist in broadening the strategies young people use to maintain or enhance their self-esteem.

Demographic factors were also associated with young people’s mobile phone behaviour. Younger participants reported more frequent use and higher levels of
involvement with their mobile phone. This finding may appear surprising given the restricted age range of participants in this study (16 to 24 years); however, environmental factors may be relevant. Younger participants would be more likely to be living at home (Arnett, 2004) and parental restrictions may limit their access to other commonly used communication technologies (Giles & Price, 2008), constraints which have potentially led to the mobile phone being the primary communication technology for younger people (ACMA, 2008a). As youth become more independent, their use of communication technologies diversifies (ACMA, 2008a; Madell & Muncer, 2004); thus, it may be that older participants accessed a number of communication technologies, such as social networking sites, rather than one specific device. Further longitudinal research assessing young people’s use of a range of communication technologies over time would assist in determining whether people who are highly involved with their mobile phone broaden this involvement to other communication technologies including email, instant messaging, and social networking sites as they mature. Gender was also associated with mobile phone involvement, but not frequency of use, with females, more likely than males, to report being involved with their mobile phone. Previous research has found that the reasons males and females use their mobile phones differ with males more likely to use their phone for functional purposes (e.g., work-related use) whereas females primarily use their phone to keep in contact with valued people in their lives (Lemish & Cohen, 2005; Rees & Noyes, 2007). Future research should investigate more fully these gender differences and their potential impact on young people’s mobile phone behaviour.
This research provides an important initial investigation into psychological factors underpinning young people’s mobile phone behaviour. By developing a model which applies specific social psychological constructs to measure frequency of mobile phone use and mobile phone involvement amongst Australian youth, the study informs our understanding of factors influencing one of the most prevalent forms of communication for young people today. The results of this study improve our understanding of the relationship between the frequency of young people’s mobile phone use and the level of their mobile phone involvement and provides important information about the characteristics of those young people who may become highly involved with their mobile phone. Overall, the research found that psychological processes related more to high involvement with mobile phones than with frequency of use. Thus, inclusion of the two behaviours allowed factors influencing both frequency of use and mobile involvement to be differentiated.

In addition to the strengths of the study, however, there are a number of limitations which may have impacted on results. First, the participants in this study reported relatively high frequencies of mobile phone use. As the data collection method comprised an on-line survey, it may be that the young people who participated were more interested in technological devices than those young people who did not take part in the study. Use of a number of data collection methods including online and paper based surveys would allow for a comparison of responses to determine this possibility. Additionally, the mean score for ingroup norm was relatively high which may have resulted in a restriction of range influencing the results. At the time of data collection, the extent of young people’s mobile phone ownership was unclear and there was noted
variability in the frequency of mobile phone use among those young people with phones.

The results of the present study reveal a number of directions for future research. The relationship between young people’s frequency of mobile phone use and their mobile phone involvement was not very large. Additionally, the amount of variance explained in young people’s frequency of use was relatively low (12%) compared to the amount of variance explained in their mobile phone involvement (44%). These results suggest factors, other than the variables included in this study, affect how often people use their phones. As mobile phones are often used for work and functional purposes (Leung & Wei, 2000; Walsh, White, Hyde et al., 2008a), it is likely that practical considerations impact on frequency of mobile phone use. Future research could assess the role of practical purposes, such as contacting employers and organising transport, on young people’s mobile phone behaviour. Age (younger) was found to be a predictor of both frequency of use and mobile phone involvement. In addition to the effect of parental rules mentioned previously, it may be that, as adolescents mature, they form close romantic relationships and are less likely to contact large groups of friends (Arnett, 2004). Inclusion of factors such as living environment, relationship status, and use of other communication technologies may improve our understanding of young people’s mobile phone use.

Finally, complex psychological processes were revealed between the variables in the study. First, self-esteem influenced participants’ need to belong with self-identity, need to belong, and ingroup norm all directly affecting their level of mobile phone involvement. Additionally, the need to belong and ingroup norms were associated with
participants’ self-identification as a mobile phone user. Further research, possibly using qualitative methods, could explore the relationship between these factors on young people’s mobile phone behaviour and their personal and social development in greater depth. In particular, the relationship between self-esteem, the need to belong, and mobile phone involvement could be investigated further. It may be that a feedback loop or a bi-directional relationship occurs in which self-esteem (via the need to belong) influences mobile phone involvement which then enhances self-esteem. Future research could disentangle the sequence of these relationships.

Overall, this study aimed to assess the effect of psychological factors influencing frequency of mobile phone use and mobile phone involvement amongst youth. The inclusion of cognitive and behavioural factors in the measure of mobile phone involvement allowed for a broader understanding of young people’s mobile phone behaviour than would be obtained by frequency of use measures alone. Whilst frequency of mobile phone use and mobile phone involvement were related, the level of variance explained in each construct and the effect of the predictors on each behaviour differed. Self-identity was the strongest predictor of both frequency of use and mobile phone involvement whilst ingroup norm and the need to belong were only associated with young people’s involvement with their phone. Additionally, the effect of young people’s self-esteem on mobile phone involvement was mediated by their need to belong, indicating indirect pathways can influence young people’s mobile phone behaviour. Results suggest implications for social development of youth and who may become reliant on the mobile phone to enhance their relationships with others and to maintain or increase their sense of self-worth. Whilst the positive benefits of mobile
phone use are well established, it is important to understand the characteristics of those young people who may develop an over-involvement with the pre-eminent communication tool used by young people today.
CHAPTER 9: GENERAL DISCUSSION

This PhD program of research investigated psychosocial factors influencing young Australians’ mobile phone behaviour. In particular, the three stage research program sought to improve our understanding of the social psychological factors underlying young people’s involvement with their mobile phones. For the purposes of this thesis, mobile phone involvement incorporates both the cognitive and behavioural aspects of people’s mobile phone behaviour. Five papers prepared during the three stages of the research program form the foundation of this PhD thesis by publication. Although the papers and stages of the research program were distinct, the program of research was developmental in nature with the findings from each stage informing the next. This developmental process enabled a fluid examination of concepts throughout the research program with new aspects relating to young people’s mobile phone behaviour being explored as they emerged. The unique integration of previous mobile phone, behavioural addiction, and social psychological research to inform this research provided a novel investigation into what has become the pre-eminent form of mediated communication among young people today.

Overall, this research program highlights the integral role that mobile phones play in young people’s lives and their social development. For instance, throughout the research program, the integration of mobile phone use into young people’s self-identity and the role of self and social influences for young people’s mobile phone behaviour were highlighted. Results consistently indicated that mobile phones provide a constant psychological connection to others which may lead some young people to develop an over-involvement with their mobile phone. The combination of a social psychological
Mobile phone involvement

perspective and an addiction framework to investigate mobile phone behaviour among youth assists in our understanding of the importance of considering social factors when exploring patterns of behaviour which have similar characteristics to an addiction.

This final chapter relates the key findings and contribution of each paper to the overall aims of the research program. The chapter also discusses the theoretical and practical implications of the research findings, the strengths and limitations of the research program, and directions for further research in this emerging research field. It must be noted that the research program specifically targeted a youth cohort, and as such, the discussion in this chapter should be considered in this context.

9.1 Integration of Key Findings in Relation to the Research Aims

9.1.1 Aim 1: Explore and Understand Mobile Phone Behaviour

Each of the five papers in this thesis contributes to the first aim of the research program, to understand and explore patterns of mobile phone behaviour amongst Australian youth. Paper 1, emanating from the first stage of the research program, drew upon focus group participants’ descriptions of their mobile phone use to understand the ways in which young people use their mobile phones, to identify the advantages and disadvantages of mobile phone use, and to explore whether indications of addictive patterns of behaviour are present amongst this cohort. Mobile phones were an integral part of many participants’ lives and were used for many functions apart from communication. For instance, young people used their mobile phones as alarm clocks, calendars, and cameras. The primary advantage of having a mobile phone was reported to be convenience. However, participants also reported some disadvantages, such as being contacted at inappropriate times (e.g., when sleeping or when with others).
In addition to identifying the ways in which people use their mobile phones, Paper 1 also revealed that many young people think about their mobile phone when not using it and also check their mobile phone regularly for missed messages and calls; patterns of behaviour which appear conceptually different to using the mobile phone for specifically communicating with others. The paper also identified concerning patterns of mobile phone behaviour with some young people reporting they use their mobile phone at inappropriate times, such as in cinemas, classes/lectures, and when driving. The perceived benefits and multiplicity of uses provided by mobile phones had resulted in some participants becoming so attached to their mobile phone that they could not imagine being without it. This level of attachment is symptomatic of an addictive pattern of behaviour, the second focus of Paper 1.

By using the framework of Brown’s (1993, 1997) behavioural addiction components, Paper 1 identified that some young people were highly involved with their mobile phones, with indications of addiction being revealed. Most commonly, participants mentioned that mobile phone use was highly salient in their thoughts and behaviour, that mobile phone use conflicted with other daily activities, and that the mere thought of being without their phone resulted in psychological distress. These findings provided a key indication that some young people were becoming highly involved with their mobile phones in a manner similar to a behavioural addiction. This emerging trend was further explored in Papers 3, 4, and 5 of the research program.

Also developed in the first stage of the research program, Paper 2 sought to understand how mobile phone use interacts with young people’s social relationships. By analysing the qualitative data from focus groups comprising young mobile phone users,
it was found that young people use their mobile phone to remain physically and psychologically connected to valued others irrespective of time or distance. For instance, text messaging during football games or using the phone to send photos or videos during concerts allowed young people to include people who were not physically present in their current activities. Mobile phone use enhanced the formation and maintenance of social relationships and was an accepted and vital part of youth’s social networks, themes which are discussed further in the next section of this chapter.

Paper 3, which combined the first and second stages of the research program, adopted a uses and gratifications approach to provide an initial understanding of the reasons why young people use their mobile phones. A brief report of qualitative data from Stage 1 revealed that young people seek social support via their mobile phone and also use their mobile phone to relieve boredom, indicating that self and social gratifications are related to mobile phone behaviour. An additional theme to emerge was practical mobile phone use, such as using the phone to arrange transport. Quantitative data analysis then revealed that fulfilling self (e.g., to feel good) and social (e.g., to stay in touch) gratifications were highly influential on mobile phone behaviour amongst youth.

Papers 3, 4, and 5 contribute to the first aim of the research program by examining patterns of calling and text messaging amongst youth. A consistent finding in all three papers was that sending and reading text messages were the most common forms of mobile use amongst participants in this research program. Additionally, the frequency of mobile phone use for both calling and text messaging varied highly amongst participants in all studies, with some participants reporting minimal use
whereas others reported high frequencies of mobile phone use. In addition to the reasons for mobile phone use and types of mobile phone use, two distinct patterns of mobile phone behaviour, frequency of mobile phone use and mobile phone involvement, were explored in the research program.

As reported in Paper 1, many mobile phone users use their phone for activities apart from communication (e.g., as an alarm) and also engage in behaviours, such as checking their mobile phone for missed messages and calls, without actually using it. Additionally, Paper 2 revealed that many people view the mobile phone as providing them with a constant psychological connection to others who are not physically present. These findings indicate that, in addition to using the phone for communication, some people have a cognitive and behavioural involvement with their mobile phones which may not be captured in measures of frequency of use alone. Papers 4 and 5 identified that frequency of use was related to the level of cognitive and behavioural involvement that people had with their mobile phone, but that different factors influenced these distinct behaviours. Thus, frequency of mobile phone use and mobile phone involvement appear to be qualitatively different aspects of mobile phone behaviour. In addition to using the mobile phone for communicating with others, people who are highly involved with their mobile phone appear to think regularly about their mobile phone and prioritise mobile phone use in their lives. This pattern of behaviour may explain why some people are unable to turn their phone off, sleep with phones under their pillows, and use their mobile phone at inappropriate times, such as in cinemas or when driving.
Overall, the findings throughout the research program contribute to our understanding of patterns of mobile phone behaviour amongst youth. Mobile phone use was found to be a common behaviour with many people using the mobile phone to facilitate and maintain social relationships. Additionally, results revealed that, although some people may be highly involved with their mobile phone in a manner similar to an addictive pattern of behaviour, these people are not necessarily highly frequent mobile phone users. The research program revealed that much mobile phone behaviour amongst young people is related to the psychological connection that young people have with their mobile phones.

9.1.2 Aim 2: Explore the Psychosocial Factors Relating to Mobile Phone Behaviour

Prior to the commencement of this program of research, there had been little exploration of the relationship between psychosocial factors and mobile phone behaviour. Thus, the majority of papers within the research program were designed to contribute to our understanding of how psychosocial factors relate to young people’s mobile phone behaviour. However, it was Paper 2, within the first stage of the research program, which specifically contributed to this second aim of the research program by drawing on the rich qualitative data obtained in the Study 1 focus groups to explore the relationship between the three major themes of connectedness, belongingness, and social identity, and young people’s mobile phone behaviour.

Psychological and actual connection to others via the mobile phone was a strong influence on young people’s mobile phone behaviour. People would physically connect to others by calling and text messaging others to let them know of important happenings in their lives or to just keep in touch over time. Thus, the mobile phone is a valuable tool
for enhancing social connection. In addition to actually connecting with people for communication purposes, the paper revealed that the mobile phone provided many young people with a sense of psychological connection to others. The presence of the mobile phone acted as a reminder that other people cared for them and that they were a part of a wider social network. Interestingly, there were no reports of contradictory views to connectedness being a valued part of mobile phone use amongst the focus group participants, indicating that physical and psychological connection to others is highly related to young people’s mobile phone behaviour.

Paper 2 also gauged whether the need to belong was related to mobile phone behaviour, furthering our understanding of the interaction between young people’s desire for relationships and their mobile phone use. It was revealed that many participants used their phone frequently to contact others to maintain their social networks and that this contact helped them to feel valued by others. Thus, fulfilling the need to belong was related to some young people’s mobile phone behaviour. Once social relationships were formed, social identity also impacted on mobile phone behaviour. Participants reported that friends and peers influenced when they obtained a mobile phone, which mobile phone carrier they used, and whether they primarily used calling or text messaging services. It was also noted that the ingroup norm of answering a mobile phone call or text message straight away often conflicted with societal norms to not use the mobile phone in some locations. However, ingroup norms were hard to ignore and often influenced mobile phone behaviour. The predictive analyses in Papers 3, 4, and 5 provide a more specific examination of social psychological factors relating to young people’s mobile phone behaviour and are described in Section 9.1.4.
9.1.3 \textit{Aim 3: Develop a Measure of Mobile Phone Behaviour}

The primary focus of the second stage of the research program (Paper 4) was to develop a new measure, the Mobile Phone Involvement Questionnaire (MPIQ), which captured the cognitive and behavioural aspects of mobile phone behaviour. The framework for the investigation into, and measurement of, mobile phone involvement throughout the research program was Brown’s (1993, 1997) behavioural addiction components. Paper 4 built on the findings of Paper 1, within the first stage of the research program, by using the qualitative descriptions of young people’s mobile phone behaviour to inform the wording of many of the items assessed for inclusion in the MPIQ. This approach is recommended when designing measures to gauge the addictive qualities of relatively new behaviours (Lemon, 2002), such as mobile phone behaviour.

Paper 1 discussed that both cognitive and behavioural aspects of mobile phone involvement were revealed during the focus group participants’ discussion of their mobile phone use. For instance, mobile phones were highly salient in young people’s cognitions as they regularly thought about their mobile phone when not using it, reported being distracted from other tasks if they were expecting a call or message, and felt psychologically connected to others via their mobile phone. Additionally, behaviours such as interrupting other activities when contacted on the mobile phone and frequently contacting others for no reason were revealed. Combining these descriptions with Brown’s (1993, 1997) behavioural addiction components facilitated the design of a measure specific to assessing young people’s mobile phone behaviour.

Paper 4, within the second stage of the research program, focussed on the development of the eight-item MPIQ. Rather than being designed as a clinical
diagnostic tool, the MPIQ was developed as a parsimonious descriptive measure of the extent to which young people interact with their phones both cognitively and behaviourally. Initially, a pool of 25 items, based on participants’ descriptions of their mobile phone behaviour (Paper 1) and Brown’s (1993, 1997) behavioural addiction components, were developed. Psychometrically unsound items were removed and the remaining items were then factor analysed. Following these procedures, the most suitable item assessing each of the eight components of behavioural addiction posited by Brown (1993, 1997); cognitive salience, behavioural salience, interpersonal conflict, conflict with other activities, relief/euphoria, loss of control/tolerance, withdrawal, and relapse and reinstatement; was retained for inclusion in the scale. The MPIQ was found to assess a unitary construct, with items explaining approximately 40% of the variance in the data. Additionally, examination of Cronbach’s alpha statistic revealed that internal reliability of the measure was sound.

To ensure that the MPIQ accurately gauged differences in people’s level of mobile phone involvement, the data were divided into high (5 and above out of 7) and low (less than 3 out of 7) scores. Examination of the raw data revealed that high scorers had positively endorsed the majority of the items in the MPIQ whereas low scorers had not. This finding indicates that those people with high MPIQ scores report experiencing the majority of addiction symptoms in the measure. Although it is acknowledged that further validation of the MPIQ is required, results in Paper 4 reveal that the MPIQ does identify increasing levels of mobile phone involvement amongst study participants. Thus, the measure is believed to have been a suitable foundation for the exploration of young people’s mobile phone behaviour conducted in this thesis.
9.1.4 Aim 4: Examine and Differentiate the Predictors of Mobile Phone Behaviour

A theme throughout this thesis has been the difference between the frequency of young people’s mobile phone use and their mobile phone involvement. Specifically, it has been argued that mobile phone involvement, which encapsulates both the cognitive and behavioural aspects of people’s mobile phone behaviour, captures a broader form of mobile phone behaviour than frequency of use alone. For this reason, Papers 3, 4, and 5 gauged the predictors of both frequency of use and indicators of addiction (Paper 3), which form the foundation of the MPIQ, or mobile phone involvement (Papers 4 and 5). Additionally, Papers 4 and 5 assessed the relationship between young people’s frequency of mobile phone use and the level of their mobile phone involvement to improve our understanding of the relationship between these behaviours. Thus, Papers 3, 4, and 5 contribute to this final aim of the research program, to examine and differentiate the predictors of mobile phone behaviour.

Initially, the relationship between psychosocial variables and mobile phone behaviour was explored in Paper 3 which combined the first and second stages of the research program. Although not strictly a psychological approach, the uses and gratifications perspective adopted in this paper provides a framework for identifying the reasons why people use communication and technological devices (Ruggiero, 2000) (see Section 2.3.4 for a review). Most commonly, social gratifications, such as staying in touch with others and letting others know they are cared about, were reported as reasons young people used their mobile phones. Self gratification emerged as the next most commonly reported reason for mobile phone use with participants reporting mobile phone use made them feel good, helped them relax, and was used as a fashion accessory.
Interestingly, predictive analyses revealed differences in the effect of self and social gratifications on frequency of mobile phone use and the three indicators of addiction assessed in the study, withdrawal, salience, and loss of control. Specifically, social gratification had the strongest influence on the frequency of young people’s mobile phone use whereas self gratification was most strongly related to the three addiction indicators. The evidence that self and social gratifications affected young people’s mobile phone behaviour obtained in Paper 3, combined with the findings that connectedness, belonging, and social identity, were related to mobile phone behaviour in Paper 2, provided evidence that the inclusion of more specific psychosocial variables in the latter stages of the research program was warranted.

Paper 4, within the second stage of the research program, extended on the findings of Papers 2 and 3 by gauging the effect of self-identity and validation from others on young people’s mobile phone behaviour. The items measuring validation from others were developed from the qualitative data reported in Paper 2 in which participants described feeling loved and valued by others when they use their mobile phone. Similar to Paper 3, in which different factors were found to influence the frequency of young people’s mobile phone use and the three indicators of addiction, the predictors of frequency of mobile phone use and mobile phone involvement, (i.e., people’s cognitive and behavioural association with their mobile phone) differed in Paper 4. Specifically, self-identity affected both frequency of use and mobile phone involvement and validation from others predicted mobile phone involvement but not frequency of use. This exploration indicated that people who valued mobile phone use as an important part of their self-concept were likely to use their phone frequently and/or
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to become highly involved with their mobile phone. However, obtaining feelings of validation from others when using a mobile phone did not influence how frequently young people used their phone but how involved they were with their phone. This result suggests that young people who derive some form of psychological benefit from mobile phone use are most likely to develop a strong cognitive and behavioural association with their phone. These results set the foundation for the inclusion of specific psychosocial predictors examined in Paper 5.

Paper 5, within the third stage of the research program, contributed to the fourth aim of the research program by examining empirically the influence of self-identity, ingroup norm, the need to belong, and self-esteem on the frequency of young people’s mobile phone use and their mobile phone involvement. Similar to Papers 3 and 4, the predictors of mobile phone involvement differed to the predictors of frequency of mobile phone use. Self-identity was the strongest predictor of both behaviours whereas ingroup norm and the need to belong influenced young people’s involvement with their mobile phone but not their frequency of use. The effect of self-esteem on mobile phone involvement was mediated by the need to belong with low self-esteem being related to higher belongingness needs which subsequently influenced young people’s involvement with their mobile phone. These results reveal that psychosocial factors underlie young people’s involvement with their mobile phone more than the frequency of their mobile phone use. Specifically, people who have a strong need for attachment to others, whose friends and peers commonly use a mobile phone, or who have incorporated mobile phone use into their self-concept are most likely to form a strong cognitive and behavioural association with their mobile phone. In addition to examining the direct
predictors of mobile phone behaviour, Paper 5 revealed an indirect path between self-esteem and mobile phone involvement in that the effect of self-esteem on mobile phone involvement was mediated by participants’ need to belong. As no relationship was found between the need to belong and frequency of mobile phone use, this mediated pathway suggests that self-esteem is related to young people’s mobile phone involvement rather than their frequency of use. Thus, overall, psychosocial factors contribute to the strength of young people’s cognitive and behavioural association with their mobile phone rather than how often they use their mobile phone to contact others.

Overall, the papers in the research program provide a solid contribution to our understanding of the relationship between psychosocial factors and young people’s mobile phone behaviour. The findings in the research program reveal that self factors, as measured by self gratifications (Paper 3) and self-identity (Papers 4 and 5), are the strongest predictors of how frequently a young person uses their mobile phone and the likelihood that a young person will become highly involved with their mobile phone. Additionally, other people affect young people’s mobile phone behaviour as shown by social influences being related to patterns of mobile phone use (Paper 2) and gratification of social motivations influencing indicators of addiction (Paper 3). Additionally, validation from others (Paper 4), ingroup norm and the need to belong (Paper 5) predicted mobile phone involvement amongst Australian youth. Thus, it is a combination, rather than one single, psychosocial factor which influences young people’s mobile phone behaviour, in particular the level of their cognitive and behavioural involvement with their mobile phone.
9.2 Theoretical Contribution of the Research

The five papers comprising this thesis add substantially to our knowledge of young people’s mobile phone behaviour and the psychosocial factors influencing young people’s association with their mobile phones. The research program highlights the important role that psychosocial concepts play in determining much social behaviour and the need to fully understand the phenomenon of interest. In general, the results in this research program offered more explanatory power than previous research, particularly those studies from a psychopathological perspective, revealing that the social psychological approach adopted within this thesis was an appropriate perspective for examining mobile phone behaviour, in particular, mobile phone involvement. The incorporation of variables which had previously been untested in relation to mobile phone behaviour, ingroup norm and the need to belong, and variables which had previously been explored in relation to mobile phone behaviour, self-identity and self-esteem, in the latter stages of the research program added substantially to our knowledge of the relationships between these constructs and mobile phone behaviour and our knowledge of their association with each other. The consistent finding that mobile phone involvement is a conceptually different aspect of mobile phone behaviour than frequency of use highlights the need to adopt a broad approach when seeking to understand young people’s use of communication technologies. Additionally, the association between psychosocial factors and young people’s mobile phone behaviour revealed throughout the research program indicates the important role that technological devices play in young people’s social development and the need to consider social factors when examining behaviour.
In addition to broad theoretical contributions, the findings of the research program add to theory in a number of specific domains. This section discusses the unique contribution of this research to furthering our understanding of mobile phone behaviour in general, addictive patterns of behaviour, and the social psychological constructs applied to investigate a novel social phenomenon.

### 9.2.1 Mobile Phone Behaviour

This thesis was one of the first programs of research to examine specifically psychosocial factors relating to young Australians’ mobile phone behaviour, a previously under-researched area. Although there have previously been qualitative (e.g., Ling, 2004; Plant, n.d.) and quantitative (e.g., Butt & Phillips, 2008; Mathews, 2004) studies in Australia and overseas, the combination of both approaches in this research program is unique and allowed for the research to follow a developmental process in which each stage built on previous findings. In particular, the thesis explored the relationship between, and the predictors of, the frequency of young people’s mobile phone use and the level of their involvement with their mobile phone. An important contribution of the research was the identification of mobile phone involvement comprising a person’s cognitive and behavioural association with their mobile phone. The development of a tool to measure young people’s mobile phone involvement throughout the research program allowed for the relationship between frequency of use and people’s cognitive and behavioural association with their phone to be explored. It was shown consistently (Papers 3, 4, and 5) that a pattern of behaviour which has similar characteristics to an addictive behaviour is conceptually different to how much a person uses their mobile phone. Although some young people were found to engage in
high levels of mobile phone use, the relationship between the frequency of young
people’s mobile phone use and their mobile phone involvement was relatively low. This
finding reveals that it is possible for a person to be highly involved with their mobile
phone without frequently using it and raises the issue that measuring mobile phone
usage in terms of frequency of use alone may represent too narrow a conceptualisation.
These results contribute greatly to our understanding of the differences in patterns of
mobile phone behaviour.

Paper 1, within the first stage of the research program, revealed the extent to
which young people have incorporated mobile phone use into their lives and elucidated
the cognitive and behavioural aspects of young people’s mobile phone behaviour. By
exploring rich qualitative data, the paper extended our understanding of the cognitive
aspects of mobile phone behaviour by identifying that young people maintain a
psychological connection with their mobile phone (e.g., thinking about their phone when
not using it). Additionally, the paper identified a number of behaviours, such as
constantly checking the phone for missed messages or calls, which are not generally
assessed in other studies. These findings and the exploration of the extent to which
Brown’s (1993, 1997) behavioural addiction components were present in young
people’s descriptions of their mobile phone behaviour signalled that some young
Australian mobile phone users are developing a pattern of behaviour which has similar
characteristics to a behavioural addiction. However, rather than the negative
consequences present in addiction being revealed, Paper 1 indicated that mobile phone
use is, in general, a highly beneficial part of young people’s lives. The findings in Paper
Mobile phone involvement

1 contribute to our understanding of the varying forms of young people’s mobile phone behaviour.

Although uses and gratifications theory is widely used by communication theorists overseas to explore the reasons why people use technological devices (as discussed in Section 2.3.4, to the candidate’s knowledge, Paper 3 was the first application of uses and gratifications theory to explore mobile phone behaviour in Australia. Thus, rather than relying exclusively on the results of overseas studies to inform our understanding of young Australians’ mobile phone behaviour, this approach provided a novel method to identify which psychological and practical factors were related to young people’s mobile phone behaviour in Australia. Although not a cross-cultural study, the findings that both self and social gratifications influenced young people’s mobile phone behaviour indicates that the motivations underlying young Australians’ mobile phone behaviour are consistent with other parts of the world (Ozcan & Kocak, 2003; O. Peters et al., 2003; Wei, 2008; Wei & Lo, 2006) and adds to our understanding of the commonalities of mobile phone behaviour in different communities.

The development of the Mobile Phone Involvement Questionnaire (MPIQ) in Paper 4 provided a useful tool to further our knowledge of young people’s mobile phone behaviour and allowed for empirical examination of different patterns of mobile phone behaviour. Rather than adapting previously developed measures, the development of this tool in the present program of research allowed for a targeted examination of a phenomenon in a specific cohort and, therefore, provides unique information about young people’s mobile phone behaviour. As mentioned previously, Papers 3, 4, and 5
identified that frequency of mobile phone use conceptually differs to both indicators of addiction (Paper 3) and mobile phone involvement (Paper 4 and 5). Additionally, the relationship between young people’s frequency of mobile phone use and their level of mobile phone involvement is relatively small. These findings indicate that, although a person may use their phone frequently, they may not be highly involved with their phone and, thus, may be able to disengage from the phone when required to do so. In contrast, people who are highly involved with their mobile phone appear to have a stronger psychological association with their phone and may keep the phone constantly available in case of contact. These findings may explain why non-frequent mobile phone users engage in activities such as mobile phone use while driving (Walsh, White, Watson et al., 2007).

As well as young people’s frequency of use and mobile phone involvement emerging as different behaviours, they appear to be influenced by different factors. The amount of variance explained in young people’s frequency of use was relatively low when compared to mobile phone involvement (Papers 4 and 5). This information suggests that broader factors should be included in future examinations of mobile phone behaviour. Overall, a major contribution of this research program has been the identification of the need to go beyond frequency of use itself, or to conceptualise use more broadly, when examining patterns of mobile phone behaviour. Both the qualitative and quantitative examinations of mobile phone behaviour throughout this thesis provide significant contributions to the current mobile phone literature and furthers our understanding of young people’s use of this predominant communication technology.
9.2.2 Addictive Patterns of Behaviour

Although this research program was not designed to investigate or diagnose a new form of addiction, it should be noted that an addiction perspective was adopted throughout the research program. However, as the program of research developed, the conceptualisation of the behaviour under investigation changed from addiction to involvement. These changes are reflected in the thesis by Papers 1 and 3 explicitly referring to symptoms and indicators of behavioural addiction whereas Papers 4 and 5 investigate mobile phone involvement. This change in terminology was primarily data driven as results in the research program did not indicate that mobile phone behaviour warranted classification as an addiction or that investigation of a pathological condition would provide a testable hypothesis. Additionally, it was revealed throughout the research program that young people’s involvement with their mobile phone produces numerous adaptive benefits and, as such, may not be an inherently negative experience. In spite of the change in terminology and the conceptualisation of the behaviour throughout the research journey, results in this study do inform our understanding of addictive patterns of behaviour as mobile phone involvement is posited to be similar in characteristic to a behavioural addiction in that both cognitive and behavioural aspects are present.

The primary basis of the investigation of mobile phone involvement in this thesis was Brown’s (1993, 1997) behavioural addiction components. Thus, the identification of addiction symptoms among young people’s descriptions of their mobile use (Paper 1), the assessment of the predictors of three addiction indicators (Paper 3), and the development (Paper 4) and use of the MPIQ (Papers 4 and 5) in empirical examinations
of mobile phone behaviour adds to our understanding of how symptoms of addiction can be manifested in commonly performed activities. The findings in the research program, however, raise an important question about what constitutes an addiction.

In general, addictions are viewed as negative pathological states in which compulsive performance of the behaviour leads to severe disruption to, and negative consequences in, a person’s life. Although concerning patterns of use (e.g., when driving) and problematic outcomes (e.g., sleep disruption and interference with daily activities) were reported by young mobile phone users in Paper 1 and some young people were found to be highly involved with their mobile phones (Papers 4 and 5), it did not appear that young people were experiencing outcomes severe enough to warrant the behaviour being classified as an addiction. The findings in this research program, then, builds on previous research concluding that high engagement with a technology, to the extent that addiction symptoms are evidenced, differs from a pathological condition (J. P. Charlton, 2002; J. P. Charlton & Danforth, 2004, 2007).

Additionally, common themes throughout the first stage of the research program were that mobile phone use provides many practical and psychological benefits to young people. Thus, the benefits of mobile phone use may outweigh any negative outcomes, supporting Glasser’s (1985) argument that some addictions may be considered positive and Orford’s (2001) contention that psychological factors are related to the performance of behaviours which have similar characteristics to an addictive pattern of behaviour. The findings in this research program provide a solid basis for research exploring the relationship between the positive and negative aspects of behaviours in which symptoms of addiction are emerging. In particular, the findings highlight the need to identify the
point at which negative consequences of behaviours outweigh the positive for the
diagnosis of addiction to be warranted.

Similar to other recent measures of mobile phone behaviour (Bianchi & Phillips,
2005; Jenaro et al., 2007; Sanchez-Martinez & Otero, 2008), symptoms of addiction
were included in the mobile phone involvement measure developed throughout this
research program. However, in contrast to the other recent measures adopting this
approach, this research program did not adapt DSM-IV TR substance dependence or
pathological gambling criteria (APA, 2000) to create the measurement tool. Rather, the
MPIQ developed in this research program was based on a qualitative exploration of
mobile phone behaviour within the target cohort and accepted behavioural addiction
criteria (Brown, 1993, 1997). The MPIQ adds to the range of existing measures of
mobile phone behaviour and provides a unique method of assessing a specific pattern of
behaviour among Australian youth. The continuum approach of the MPIQ allows the
association between psychological constructs and increasingly severe symptoms to be
gauged (Edwards & Gross, 1976), improving our understanding of how addictive
patterns of behaviour may develop.

Although it is acknowledged that further validation is required, the MPIQ
developed in the study was a parsimonious descriptive measurement tool which
provided a reliable foundation for investigating young people’s cognitive and
behavioural association with their mobile phone in both Papers 4 and 5 and adds to our
understanding of the presence of addiction symptoms in an every day activity. As other
research has concluded that people who demonstrate signs of addiction in their mobile
phone behaviour are more likely to engage in problematic mobile phone use (Bianchi &
the development and use of the MPIQ in the present research builds on the findings of previous research by enabling identification of the characteristics of those people who may potentially engage in concerning patterns of behaviour.

9.2.3 Social Psychological Factors

The current program of research has contributed broadly to the social psychological literature by exploring the role of identity constructs and social motivations for young people’s mobile phone behaviour. The research program highlights the importance of considering psychosocial constructs when conducting research among a group who are undergoing identity change and whose behaviour and psychological well-being are highly influenced by other people (Arnett, 2004). Additionally, results indicate that adoption of a psychosocial approach may be more appropriate to investigating mobile phone behaviour than the psychopathological or addiction perspective used in previous research due to the inherently social nature of the behaviour revealed throughout the thesis.

Throughout the research program, mobile phones were found to provide both an actual and a psychological connectivity to valued people and were integral to the continuation of many relationships. This finding suggests that social psychological processes may be developing beyond those traditionally theorised and indicates the complex nature of identity development. For instance, the constant connectivity to others offered by mobile phones appears to be increasing the importance of the phone to some users’ self-identities. Rather than the physical presence of other group members influencing a person’s attitudes and behaviour, as posited by social identity theorists
(Hogg & Abrams, 1988; Turner, 1991), mobile phones may represent a mediated form of the group’s presence which provides a constant reminder of normative behaviours and increases the salience of group memberships to the person’s identity. Thus, rather than self and social identities being at separate ends of a continuum (Hogg & Abrams, 1988), it may be that mobile phones are leading to self and social identities becoming more closely aligned. In addition to raising possible developments in the broad social psychological arena, the program of research also contributes to theory in specific social psychological domains by expanding our knowledge of the association between self-identity, social identity, and the social motivations of self-esteem and the need to belong, and young people’s mobile phone behaviour.

9.2.3.1 Self-identity

A consistent theme in the second and third stages of this research program was that self-identity is highly influential on mobile phone behaviour, supporting the role for self-identity in behavioural performance (Fekadu & Kraft, 2001; Sparks & Guthrie, 1998). Throughout the research program, young people were found to perceive that their mobile phone was an important part of their self-identity, supporting the proposition that material goods can be integrated into our sense of self (Belk, 1988; Dittmar, 1992, 2004a). Support for this viewpoint was most evident in Paper 1 in which some participants viewed the mobile phone as being like an appendage and that they could not imagine life without their mobile phone. Additionally, in Paper 3, using the mobile phone as a fashion accessory was revealed as one of the gratifications relating to young people’s mobile phone behaviour. This finding builds on previous research which found that mobile phones are a form of self-expressive identity by many young people.
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(Mannetti et al., 2002; Walsh & White, 2007). As young people are developing their sense of self, results in the research program assist us understand the processes by which material objects become incorporated into people’s identity.

Behaviours which produce positive outcomes and are socially reinforced are likely to become a valued activity within a person’s life subsequently leading to the behaviour being integrated into their self-identity (Gergen, 1971; Stryker, 1987). In general, mobile phone use was perceived to provide many benefits to young people, such as easy contact between family and friends, feelings of safety and security, and increased social inclusion. These benefits led to some mobile phone users being unable to consider being without their mobile phone as they would not be able to contact others (Paper 1). Findings throughout the research program reveal the important part that mobile phone use plays in many young people’s lives and improves our understanding of how valued behaviours become incorporated into a person’s self-identity.

Once a behaviour is incorporated into a person’s self-identity, continued behavioural performance is more likely (Sparks & Guthrie, 1998; Stryker, 1987). Papers 4 and 5 extend our understanding of how self-identity influences behaviour. Self-identity was the strongest predictor of both young people’s frequency of mobile phone use and their level of mobile phone involvement, revealing that, in addition to influencing how much a person performs a behaviour, self-identity also impacts on the level of cognitive and behavioural association a person has with the behaviour. As a role for self-identity has been found for pathological addictions (Koski-Jannes, 2002), results in this study expand this knowledge to the relationship between self-identity and non-pathological behaviours which have similar characteristics to an addiction.
In addition to the research program providing information about the association between self-identity and mobile phone behaviour, relationships were revealed between other psychosocial constructs and self-identity. Results in Paper 5, in particular, provide an important insight into the formation of self-identity in the context of mobile phone behaviour. Although these relationships need further exploration, results revealed that both the need to belong and ingroup norm were related to young people’s self-identification as a mobile phone user. Specifically, people with a strong need to belong or who perceived that their friends and peers commonly used a mobile phone were likely to report high self-identification as a mobile phone user. The implication of these findings is that when people seek to behave in a manner similar to their friends and peers, their sense of self becomes influenced by other people, as proposed by social identity theorists (Hogg & Abrams, 1988; Hogg, Terry, & White, 1995; Turner, 1991). As youth are in a life-stage in which their self-identity is developing (Arnett, 2004), these findings provide further evidence that the behaviour of others influences young people’s sense of self. Overall, the research program highlights the importance of considering self-identity when assessing behavioural performance and also provides a vital contribution to improving our understanding of how a modern communication technology has become entrenched in young people’s self-identity.

9.2.3.2 Social Identity.

A role for social identity processes, particularly ingroup norm, for young people’s mobile phone behaviour was revealed throughout the research program. Social identity theory posits that people’s behaviour is related to their membership of valued social groups (Hogg & Abrams, 1988; Turner, 1991, 1999). In particular, people seek to
behave in a manner congruent with other group members with ingroup norms becoming a reference point for much behaviour. Support for social identity theory in general and the specific role for ingroup norm was found throughout the research program with young people seeking to behave in a manner which was acceptable amongst their friendship group. Overall, it was revealed that mobile phone use was valued for increasing the salience of group memberships and facilitating relationships with other people. Additionally, it was shown that social influences are associated with the development of young people’s strong cognitive and behavioural relationship with their phone. These findings highlight the important role that social identity influences play in determining behaviour among a cohort who are particularly receptive to group pressure (Arnett, 2004; Smetana et al., 2006). Each stage of the present program of research contributes to our understanding of the relationship between social identity processes and young people’s behaviour.

Paper 2 initially revealed that social identity processes were related to young people’s mobile phone behaviour with many young people seeking to behave in a manner similar to their friends and peers. An interesting development throughout the research program was that although mobile phone use was reported to be highly common amongst friends and peers (Papers 2 and 5) and friends and peers were reported to influence young people’s choice of carrier and whether they used their phone for calling or text messaging (Paper 1), ingroup norm did not predict young people’s frequency of mobile phone use but influenced their level of involvement with their mobile phone (Paper 5). As mobile phones were revealed to provide a source of psychological connection to others throughout the research program, the finding that
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ingroup norm impacts on mobile phone involvement rather than frequency of use provides a preliminary indication that normative influences are more strongly related to the cognitive aspects of mobile phone behaviour rather than to actual use.

Additionally, results in the study indicate that mobile phones increase the salience of group memberships by providing a psychological connection to others and that this psychological presence affects behaviour (Ellemers et al., 2002; White et al., 2002). For instance, in Paper 2, a focus group participant described her difficulty in not conforming to the normative behaviour of answering the phone when she was in a situation where this action would be inappropriate. It was commonly found throughout the research program that being connected to others via the mobile phone was extremely important to young people (Papers 2 and 3) and that they received positive psychological enhancement from contact with others (Papers 2 and 4). Thus, although ingroup norm was not associated with frequency of use, young people’s desire to be connected to relevant referent groups appears to be influencing their cognitive and behavioural association with their mobile phone when they are apart from the group. These findings then extend our knowledge of how referent groups impact on young people’s behaviour in situations when the group is not present.

Results in the research program also suggest that other social identity theory processes may relate to young people’s mobile phone behaviour. For instance, a key tenet of social identity theory is that group members have a positive view of their ingroup and a negative view of outgroup members (Hogg & Abrams, 1988; Turner, 1999; Turner et al., 1987). This theme was reflected in the qualitative findings of Paper 2 in which non-mobile phone owners were perceived negatively with participants
seeking to ensure that they were not identified as being associated with this outgroup. Additionally, participants in the focus group discussed how they became members of a ‘club’ of people who owned and used a mobile phone as soon as they purchased their mobile phone. Thus, it appears that owning a mobile phone is an important factor in being included in a group and that not owning or using a mobile phone may be perceived as a basis for exclusion from valued groups. The ingroup/outgroup trend in relation to young people’s mobile phone behaviour revealed in the present research program could be explored further in future research. Overall, the research program was a useful application of social identity theory to explore a prevalent behaviour among Australian youth. The findings in the research program highlight the important role of social identity processes for young people's social development and the use of technology in the formation and maintenance of their social identity.

9.2.3.3 Social Motivations: Belonging and Self-esteem

Social motivations are posited to underpin much behaviour (Fiske, 2004) and the present program of research extends our understanding of how social motivations relate to behaviour. Exploring the association between the need to belong and mobile phone behaviour (Papers 2 and 5) and the relationship between the need to belong and self-esteem in the present program of research (Paper 5) improves our present knowledge of the relationship between these two constructs and the effect of these social motivations on behaviour. A fundamental component of belongingness theory is that people have a desire to form stable relationships with others and will frequently perform behaviours which fulfill this need (see for example, Baumeister & Leary, 1995; Leary et al., 2007). A common theme throughout the research program was that young people were
motivated to use their mobile phone to contact others so that their social connection was maintained. To the candidate’s knowledge, the relationship between the need to belong and behavioural performance has been rarely tested in empirical studies; rather the majority of tests of belongingness theory relate to how a lack of belonging reduces psychological well-being (see for example, Gaillot & Baumeister, 2007; A. Smith & Williams, 2004).

A practical application testing the influence of the need to belong on behaviour was conducted in Paper 5. Interestingly, the need to belong did not influence young people’s frequency of mobile phone use but affected the level of their involvement with their mobile phone. These results suggest, then, that the need for relationships with others leads to some young people forming a strong cognitive and behavioural attachment to their mobile phone such that they may act in a manner similar to an addictive pattern of behaviour. Thus, the present research program assists us to understand how young people’s need for relationships to others motivates them to remain constantly available and psychologically connected to others via a communication technology.

In addition to the need to belong influencing behaviour, one way in which feelings of belonging facilitate psychological well-being is by enhancing and maintaining people’s self-esteem (Baumeister & Leary, 1995; Gaillot & Baumeister, 2007; Leary et al., 2007). This research program provides support for this hypothesis as young people reported that using a mobile phone enhanced their social relationships and led to them feeling that others valued and cared for them (Paper 2). There have been contradictory findings in research assessing the effect of self-esteem on mobile phone
behaviour with some research finding that level of self-esteem influences mobile phone behaviour (Bianchi & Phillips, 2005; Ha et al., 2008) whereas other research has not (Butt & Phillips, 2008; Ehrenberg et al., 2008; Phillips et al., 2006). Although not a direct test of the relationship between self-esteem and mobile phone behaviour, Paper 4 revealed that young people who use the mobile phone to receive validation from others are likely to report high mobile phone involvement. This finding suggests that mobile phone use provides a form of self-esteem enhancement for some young people and adds to our understanding of how self-esteem relates to young people’s mobile phone behaviour.

As Baumeister and Leary (1995) argue that low self-esteem is related to high belongingness needs and that people with a high need to belong are more likely to perform behaviours which facilitate their connection to others, a mediated, rather than direct, relationship between self-esteem and mobile phone behaviour was hypothesised in Paper 5. Specifically, it was proposed that the effect of self-esteem on young people’s mobile phone behaviour would be mediated by their need to belong. First, a negative relationship was found between self-esteem and the need to belong, supporting Baumeister and Leary’s argument that people with low self-esteem have stronger belongingness needs. The need to belong subsequently predicted young people’s level of involvement with their mobile phone. These findings indicate that self-esteem enhancement underlies some young people’s involvement with communication technologies that provide a method of receiving support and acceptance from others.

Rather than being a uni-directional pathway, however, it may be that a positive feedback loop or bi-directional relationship develops in which youth who are low in
self-esteem seek to form strong attachments to others, and, as a consequence, become highly involved with their mobile phone. Fulfilling the need to belong by using their mobile phone may subsequently enhance their self-esteem which, in turn, leads to higher mobile phone involvement. Although preliminary, these findings provide a basis for further research into how self-esteem and the need to belong influence social behaviour and also raise important implications for the social development of youth, particularly, those youth who are low in self-esteem. As mobile phone use is primarily a social behaviour, the present research program provided a suitable practical application in which to improve our understanding of how social motivations relate to behaviour. In particular, exploring the role of the need to belong and self-esteem for young people’s mobile phone behaviour contributes to our awareness of the relationship between these two social motivations and the influence of these motivations on one of the most prevalent forms of social behaviour amongst young people today.

Overall, the present program of research provided a significant contribution to theory in a number of areas. Conceptualising the cognitive and behavioural aspects of mobile phone behaviour as mobile phone involvement serves as a helpful method of improving our understanding of emerging patterns of mobile phone behaviour amongst youth. In particular, viewing mobile phone involvement, not as a pathological condition but, as a pattern of behaviour which has similar characteristics to an addictive behaviour, will facilitate future investigation of both the positive and negative aspects relating to mobile phone behaviour. Further, the adoption of a continuum approach to measure mobile phone involvement highlights the utility of developing tools which
enable the increasing severity of addiction symptoms to be gauged so that factors impacting on the development of addictive behaviours are better understood.

Additionally, the social psychological approach used throughout the research broadened our understanding of the psychological underpinnings of young people’s mobile phone behaviour beyond the personality characteristics (Butt & Phillips, 2008; Ehrenberg et al., 2008; Phillips et al., 2006) and psychopathological factors (Ha et al., 2008; Sanchez-Martinez & Otero, 2008) assessed in previous research. The psychosocial approach adopted in the research program was a useful and informative method to provide us with a greater understanding of why mobile phones have rapidly evolved beyond being a communication tool for many young people. The utility of the social psychological perspective adopted in this thesis suggests that incorporating social psychological theories into research investigating people’s use of other communication technologies, such as social networking sites, would be warranted.

9.3 Practical Implications of the Research

The findings of the present program of research have several practical implications for people seeking to understand young people’s mobile phone behaviour and for designing strategies to encourage appropriate mobile phone use among youth. Overall, mobile phone use was found to be perceived as highly beneficial by participants with mobile phone use providing a number of prosocial and adaptive benefits to young people, including ease of contact with others, provision of feelings of safety and security, and potential use in an emergency. Young people, in particular, obtain a positive sense of self-worth by frequent positive feedback from others (Laible et al., 2004) and, thus, mobile phones appear to provide a mechanism for assisting many
young people to gain a sense of belonging to others which facilitates positive well-being. Results in this research program indicate that mobile phones may be a useful tool for providing social support to young people who experience loneliness due to geographical isolation or to assist socially anxious people to form relationships with others by providing a mediated, rather than face to face, communication method in a manner similar to the internet (Valkenburg & Peter, 2007).

Results in the research program indicate that there is a sub-sample of young people who are at risk of developing a high involvement with their mobile phone. Rather than assuming that all young people are at risk of developing this pattern of behaviour, this research highlights the need to identify the specific characteristics of those young people who may develop an addictive pattern of mobile phone behaviour and to assess whether these young people are a specific sub-sample of risky youth who may engage in other problematic behaviours. The findings of the research program also highlight the importance of understanding the cognitive, rather than purely behavioural, association that young people have with their mobile phone. Thus, results in this research indicate that rather than merely trying to reduce frequency of use, strategies designed to reduce inappropriate mobile phone use (e.g., in schools and when driving) or to encourage appropriate mobile phone use should consider the psychosocial factors revealed to influence young people’s mobile phone involvement in this study.

The robustness of self-identity as a predictor of both frequency of mobile phone use and mobile phone involvement in the current research (Papers 4 and 5) suggests that it will be difficult to design strategies to reduce inappropriate mobile phone use (e.g., when driving and in schools) without attempting to minimise the importance of mobile
phone use to young people’s self-identity. Given the level of integration of mobile phone behaviour into young people’s lives revealed throughout this research program and that age was a predictor of mobile phone involvement in one of the studies (Paper 5), it may be necessary to introduce such strategies at an early age. Encouraging young adolescents to view themselves as multi-faceted (Koski-Jannes, 2002) and reinforcing the view that mobile phones are primarily a communication tool rather than a reflection of their self-concept may assist in encouraging new users to engage in appropriate mobile phone use. For instance, advertisements could externalise the phone from the person and focus on the practical advantages that the mobile phone provides rather than the symbolic aspects of mobile phone use. Additionally, challenging existing mobile phone users’ sense of self-identity beyond that of merely being a mobile phone user may reduce some people’s level of involvement with their phone and potential performance of concerning behaviours. For example, a campaign slogan such as “We understand your mobile phone is important to you but is it more important than being a safe driver?” may be effective. In addition to self-identity, social identity was also found to be related to young people’s mobile phone behaviour. As social identity influenced the commencement and most frequent form of mobile phone use in Paper 2 and ingroup norm predicted mobile phone involvement (Paper 5), it may be possible that normative pressure could be used to encourage appropriate use.

The findings of this research also indicate that it is those young people who are low in self-esteem who are likely to have strong belongingness needs and to become highly involved with their mobile phone (Paper 5). This finding has concerning implications for young people’s development as it indicates that some young people rely
on a technological tool as a method for increasing their sense of self-worth rather than
developing internal strategies to enhance their self-esteem. Encouraging young people to
be less reliant on others and to develop internal strategies to maintain and enhance their
self-esteem may be warranted. For instance, young people should be encouraged to
acknowledge their individual values, interests, and strengths so that they feel worthy
(Mruk, 2006) irrespective of how much mobile phone contact they have with their
friends and peers. Additionally, the findings from internet research suggests that young
people who rely on a technology to facilitate the formation of social relationship may
limit the number of alternate strategies, such as face to face communication, which may
also produce these positive outcomes (Kraut et al., 2002). Encouraging young people to
see the mobile phone as a way to enhance, rather than replace, other social activities
may be appropriate.

Finally, in addition to perceiving the positive outcomes of mobile phone use,
young people were also aware of the problematic outcomes of mobile phone behaviour
but tended to downplay these negative aspects of mobile phone use (Papers 1).
Similarly, other research has concluded that the majority of mobile phone owners
perceive that the positive aspects of mobile phone use outweigh any negative aspects
(Martha & Griffet, 2007; Walsh & White, 2006; Walsh, White, Hyde et al., 2008a).
Given that increasing numbers of drivers are using mobile phones while driving, an
unsafe driving practice (Insurance Institute for Highway Safety, 2006), and mobile
phone debt among young people is increasing (ACA, 2004b), there is a need to actively
challenge these behaviours. One method may be by encouraging mobile phone users to
engage in a cost/benefit analysis (J. T. Cohen & Graham, 2003; Shotton, 1991) when
considering whether to use their phone. For instance, to address mobile phone use when
driving, a billboard showing a young driver about to crash while using their phone could
have the slogan “There’s a time and a place for everything, BUT when you’re driving is
neither the time nor the place to use your phone.”

Overall, the findings in this research program provide important information
which can be practically applied when designing campaigns to encourage young people
to use their phones appropriately and to discourage concerning patterns of behaviour.
The psychosocial approach adopted in the research program enabled those socially
related factors impacting on young Australians’ mobile phone behaviour to be identified
and highlight the adaptive role that mobile phone use plays in many young people’s
social development. The findings of the research program are particularly appropriate
for application in strategies designed to address young people’s high level of association
with a technology which is primarily a tool for social communication.

9.4 Strengths and Limitations

In the discussion of the theoretical contribution and the practical implications of
this program of research in the previous sections of this chapter, a number of strengths
of the research program were identified. To the candidate’s knowledge, the present
program of research was the first specific investigation of psychosocial factors
influencing mobile phone behaviour among Australian youth and, thus, provided unique
contributions to both theory and practice. In addition to adopting a novel approach to
explore an emerging research area, there are a number of other strengths of the research
program which should be acknowledged.
One of the notable strengths of this PhD program of research lies in the use of both qualitative and quantitative data collection methods to facilitate the developmental nature of the thesis. Adopting a qualitative methodology in Stage 1 of the research program allowed for an in-depth understanding of young people’s mobile phone behaviour to be gained and produced a solid foundation for the development of the mobile phone involvement questionnaire and the inclusion of social psychological predictors in the later stages of the research program. Rather than using pre-determined items to assess symptoms of addiction, the words of young mobile phone users themselves were able to inform the items in the MPIQ. Thus, the tool was targeted to the specific cohort and behaviour under investigation. The use of quantitative methods in the latter stages of the program enabled predictive analyses to be conducted to further our understanding of the influences on young people’s mobile phone behaviour.

In addition to using both qualitative and quantitative approaches, there was a mixture of data collection methods including focus groups, pen and paper surveys, and an online survey, used in the research program. The use of an online survey in Paper 5, particularly, may have allowed for a broader range of participants to be included in the study than would have been gained by traditional methods. Although some authors argue that internet based surveys are restrictive (Birnbaum, 2004; Rhodes, Bowie, & Hergenrather, 2003), others have found that use of internet based surveys are as representative as other surveys and enable the research to be conducted over a greater geographic area and to attract participants from broader socio-demographic backgrounds than traditional pen and paper surveys (Gosling, Vazire, Srivastava, & John, 2004; M. A. Smith & Leigh, 1997). Additionally, data from internet surveys has been found
equivalent to that obtained in traditional pen and paper surveys (Lewis, Watson, & White, in press) supporting the use of this approach in the research program.

Finally, the use of a range of theoretical perspectives to inform this research program is a particular strength given the relative newness of research investigating young people’s mobile phone behaviour. Rather than relying on one theoretical approach, the research drew on previous communication, sociological, addiction theory, and social psychological perspectives for the design of the research program and the interpretation of findings in the studies. Thus, results from the program of research offer a broad understanding of the multiplicity of factors relating to young people’s mobile phone behaviour. In particular, the use of a behavioural addiction framework as the foundation for the mobile phone involvement measure developed in this program of research allowed for a broader assessment of the cognitive and behavioural aspects of mobile phone behaviour to be undertaken than had frequency of use measures alone been used.

An additional strength of the study was the use of a targeted cohort who are recognised as the most prolific users of mobile phones in Australia for both communication and non-communication purposes (ACMA, 2007; Mackay & Weidlich, 2007) and who are also most likely to develop concerning patterns of mobile phone behaviour (Bianchi & Phillips, 2005; James & Drennan, 2005; Walsh & White, 2006). Youth are going through a unique stage of identity development and change (Arnett, 2004; Smetana et al., 2006) and, thus, may have different considerations to other demographic groups. The exploration of psychosocial factors in the context of mobile phone use among this cohort adds to our understanding of young people’s development.
In addition to the strengths of the research program, there are a number of limitations which should be noted. The cross-sectional nature of the studies in research program presents a limitation in this thesis. Results of the research program indicated that complex psychological processes were related to young people’s mobile phone behaviour. For instance, Paper 5 suggested the potential for a feedback loop to develop in which positive expectancies (e.g., enhanced self-esteem) lead to behavioural motivation (need to belong) increasing the level of people’s involvement with their mobile phone. As the findings from Papers 2 and 3 indicate that mobile phone behaviour results in enhanced social inclusion and psychological connection with others, it may also be that mobile phone involvement produces positive outcomes which then reinforce continued behaviour. Consequently, positive expectancies may both lead to, and result from, behavioural performance. The cross-sectional nature of the studies in this research program did not allow for an exploration of how these processes may develop.

Similarly, mobile phones are used for multiple purposes and, thus, there is a difficulty disentangling general mobile phone behaviour from highly involved use mobile phone behaviour. It may be that some people who report high mobile phone involvement behave in this manner because the mobile phone is used for multiple functions in their lives, for example both work and personal purposes.

The self-report nature of the studies also has some inherent limitations which may have influenced results. As noted in Section 1.3.2, measures of frequency of mobile phone use, in particular the amount of time per day people use their mobile phone, can be unreliable with people significantly over- or under-estimating their actual level of use (A. A. Cohen & Lemish, 2003). Despite this research program seeking to improve the
reliability of participants’ self-reported mobile phone use by gauging the number of times a day participants used their mobile phones for specific behaviours to create composite frequency of mobile phone use measure (Kazdin, 2003), and designing the mobile phone involvement measure, in part, to address this limitation, it may be that the relationship between frequency of use and mobile phone involvement is higher or lower than found in this study. Although it is believed that the frequency of use measure employed in this research program provided the best proxy measure of participants’ actual mobile phone use, correlating people’s MPIQ scores with their actual calling records would assist in more accurately determining the relationship between these two forms of mobile phone behaviour.

Additionally, social desirability biases may have impacted on results. The use of focus groups for data collection in the first stage of the research program may have constrained participants from reporting socially undesirable behaviours, such as cyberbullying and receiving pornographic materials. It may be that complementing the focus groups with individual interviews could have allowed for undesirable behaviours to emerge more strongly. In the second stage of the research program, the majority of participants completed the questionnaire in school and university settings. Thus, the presence of friends and peers, and teachers, may have impacted on the responses obtained in this study. Although this limitation was addressed in Paper 5 by using an online survey as the data collection method, the use of an internet-only approach in the third stage of the program of research may have produced an additional constraint within the research program. The relatively high self-reported frequency of mobile phone use in Paper 5 may be due to the on-line nature of the survey tool. It may be that
participants in the study were more technologically adept than those participants who did not take part. Thus, adopting a multi-method approach for the qualitative data collection in the first stage and for the quantitative data collections in both the second and third stages of the research program may have been appropriate.

Although a notable strength of the study, the measure of mobile phone involvement developed in this research program is a new measure which has not been subjected to rigorous psychometric testing and external validation. The MPIQ was based on a framework of behavioural addiction components (Brown, 1993, 1997); however, the applicability and utility of the items in the measure to gauge signs of addictive behaviour among mobile phone users requires further exploration. It may be that use of this addiction framework to explore young people’s qualitative descriptions of their mobile phone use in Paper 1 led to additional symptoms specific to mobile phone behaviour being overlooked. Additionally, the use of a snow-balling approach to recruit participants in the first stage of the research program may have led to a biased sample being recruited. Participants were drawn from an urban environment and may have recruited similar others to take part in the study. This selection bias may have restricted the range of addiction symptoms noted.

Although acknowledged previously as a strength of the research program, the use of specific youth cohort may also present an additional constraint to the findings of the program of research. Although young people are acknowledged as the most prolific users of mobile phones (ACMA, 2008a; Oh et al., 2008) and the most likely cohort to engage in problematic behaviours (Bianchi & Phillips, 2005; Pennay, 2006; Walsh & White, 2006), the focus on young people throughout the research program may limit the
applicability of the MPIQ to this cohort and reduce the generalisability of results in the research program to other age groups. Additionally, the psychosocial factors identified as being associated with young people’s mobile phone behaviour may be specific to this cohort due to the unique characteristics of this age group. It may also be that the participants in this research program were undergoing different life transitions (e.g., leaving school, commencing work) and, as such, developmental differences within this age group may have influenced findings.

Finally, it may also be that the restriction of variables to social psychological factors may have limited our understanding of young people’s mobile phone behaviour. Inclusion of a wider range of psychological constructs may have extended our knowledge of the range of psychological influences on young people’s mobile phone behaviour. In spite of the limitations of the research program, however, the present program of research was a unique approach to examining one of the most prevalent behaviours among young people today and provides a number of directions for future research.

9.5 Future Research Directions

By examining young people’s mobile phone behaviour, in particular, young people’s cognitive and behavioural association with their mobile phones and providing preliminary evidence that social psychological factors influence mobile phone behaviour, the present research provides a solid foundation for further research. With respect to theoretical research directions, the findings in this research program suggest the need to explore whether mobile phones (and other related communication technologies) have an impact on the way in which some social psychological processes
are exhibited or enhanced in conjunction with the technology. As discussed in Section 9.2.3, it may be that the mediated presence of others offered by mobile phones increases the salience of relationships and group memberships and, subsequently, strengthens the influence of other people on a young person’s behaviour. Further research should explore the effect of actual and psychological constant connectivity to others via the mobile phone on young people’s identity development and investigate the effect of these mediated social relationships on behaviour. Additionally, further research is required to determine whether the social contact afforded by mobile phones is replacing or enhancing the face to face and personal interactions required for belongingness needs to be met. In addition to signalling future research directions in the broad social psychological arena, there are a number of specific suggestions for future research which would build on the findings of this research program.

As discussed earlier, the mobile phone involvement measure developed in this study was based on an accepted behavioural addiction framework. However, it may be that additional symptoms, such as sleeping with the phone under a pillow (Punamake et al., 2007) and being unable to turn the phone off (Wacjman et al., 2008), may have been suitable for inclusion in the measure. Further research could identify whether other mobile phone specific symptoms not identified in this research program should be included in future measures assessing a pattern of mobile phone behaviour which has similar characteristics to a behavioural addiction. Although it is believed that the MPIQ was a reliable descriptive tool for investigating young people’s mobile phone behaviour in the present research, further validation of the psychometric properties to ensure generalisability of the tool is also required.
Although a number of positive outcomes of mobile phone use were revealed in the research program, a thorough investigation of negative outcomes of mobile phone behaviour was not conducted. Thus, the hypothesised link between mobile phone involvement and concerning patterns of mobile phone behaviour, such as when driving, was not tested. Future research should seek to explore further both the positive and negative outcomes of mobile phone behaviour and identify the point at which negative outcomes outweigh the positive. Additionally, inclusion of measures of problematic mobile phone behaviour (such as when driving) and negative outcomes of mobile phone use (e.g., debt) would provide a better understanding of whether mobile phone involvement is related to concerning patterns of mobile phone behaviour. It may be that problematic mobile phone use is associated more with internal control factors, such as impulsivity, than a high level of mobile phone involvement. Further examination of behaviours such as checking the mobile phone for missed messages or calls, which suggest some form of difficulty with impulse control, may be also assist in improving our understanding of how addictive patterns of mobile phone behaviour develop.

Future research using a longitudinal design would build further on the findings of this research program. Addictive patterns of behaviour develop over time with highly frequent use generally preceding the appearance of addiction symptoms (J. P. Charlton & Danforth, 2007; Orford, 2001). Additionally, self-identity develops over time as objects and behaviours which produce positive outcomes become more entrenched in a person’s identity (Gergen, 1971; Stryker, 1987). Young people are transitioning through a life stage in which they are not only developing their identity but are also developing patterns of behaviour which will continue through adulthood (Arnett, 2004; Smetana et
al., 2006). Thus, adoption of a longitudinal approach could provide more specific
information about the sequence of events influencing young people’s identity
development and the emergence of a pattern of behaviour which has similar
characteristics to an addiction.

Results in the research program indicate that the association between self-esteem
and the need to belong and young people’s mobile phone behaviour is not a simple uni-
directional relationship. Given that one of the primary positive outcomes of mobile
phone use is the facilitation of contact with others which potentially enhances self worth
and people who are low in self-esteem have a strong need to belong which results in
them becoming highly involved with their mobile phone, it may be that self-esteem
enhancement and belonging both underlie, and result from, young people’s mobile
phone behaviour. Thus, a positive feedback loop or bi-directional relationship may
impact on young people’s mobile phone behaviour. It may also be that receiving, rather
than making, a higher proportion of calls and text messages influences levels of self-
esteeem and belonging. Further research, perhaps using a longitudinal or qualitative
approach, could provide an in-depth exploration of the processes underlying the
relationship between these social motivations and young people’s mobile phone
behaviour, in general, as well as for inbound and outbound communication.

In addition to further investigation of the relationship between social motivations
and young people’s mobile phone behaviour, inclusion of additional psychological
predictors in future research may be warranted. As young people are forming
relationships with others, approaches such as attachment theory (Ainsworth, 1989;
Bowlby, 1969) or social exchange theory (Kelley, 1979) may broaden our understanding
of how mobile phone behaviour is related to young people’s social development. Additionally, inclusion of individual difference constructs such as personality traits (Costa & McCrae, 1992; McCrae & Costa, 1984) or developmental stage theories (Erikson, 1968) in addition to social psychological predictors in future research may enable comparison of the role of personal and social factors for young people’s mobile phone behaviour. It must also be noted that the amount of variance in young people’s frequency of mobile use explained by the predictors in the research program was relatively low, suggesting other factors may affect how much young people use their mobile phone. Assessment of factors such as work versus personal use, relationship status, income, cost of mobile phone use, and access to other communication technologies may be useful when assessing how frequently young people use their mobile phone. Additionally, as age was a predictor of young people’s mobile phone involvement, further research could examine whether there are important developmental differences within this cohort which may affect their mobile phone behaviour.

In addition to being prolific users of mobile phones, young Australians are frequent users of other communication technologies such as instant messaging and social networking sites (ACMA, 2007). Further research could gauge whether the trends revealed in this research program, specifically that frequency of use differs from level of involvement, are found in young people’s use of other communication technologies or if the social psychological variables assessed in this research program are also applicable to these other behaviours. Finally, mobile phone behaviour occurs across all parts of society. Although problematic mobile phone use, such as when driving, are most prevalent amongst younger people, older people also perform these activities (ACMA,
2007; Pennay, 2006; Walsh, White, Watson et al., 2007). Thus, further research is required to understand the factors influencing mobile phone behaviour amongst the members of broader Australian society and to identify whether the findings in this research are specific to the youth cohort or may be relevant to other age groups.

9.6 Summary and Conclusions

This thesis by publication presented a unique examination of a modern day phenomenon, young people’s pre-occupation with their mobile phones. The research program comprised three distinct stages and utilised both qualitative and quantitative methodologies to investigate mobile phone behaviour among Australian youth aged between 15 and 24 years. Adopting a developmental research design, in which each subsequent stage built on the findings of the preceding research, facilitated the investigation of an emerging pattern of mobile phone behaviour, young people’s mobile phone involvement, conceptualised in this thesis as a person’s cognitive and behavioural association with their mobile phone. The use of a youth cohort and the unique integration of mobile phone research, addiction perspectives, and social psychological theories throughout the research program provided a solid framework for this focussed investigation of a prolific behaviour among young people today. Findings from the research program provide a significant contribution to our understanding of young people’s social development and their use of this communication technology.

The first stage of the research program elucidated patterns of mobile phone behaviour amongst young people and developed an understanding of psychological factors influencing their use of mobile phones. Mobile phones were perceived as being highly beneficial with mobile phone use being an intrinsic part of young people’s lives.
Mobile phones performed multiple functions in users’ lives, facilitated contact between family and friends, and acted as a security device. Mobile phone use was so strongly integrated into young people’s behaviour that symptoms of behavioural addiction, such as mobile phone use interrupting their daily activities and pre-occupying their thoughts, were revealed. This stage also revealed how the need to belong and social identity (two constructs which had not previously been explored in the context of mobile phone behaviour) were related to young people’s mobile phone behaviour. The findings in this stage laid a strong foundation for the further investigation of the relationship between social psychological factors and young people’s mobile behaviour in the thesis.

The second stage of the research program provided an important contribution to our understanding of young people’s mobile phone behaviour. An initial investigation of factors influencing young people’s mobile phone behaviour adopting a uses and gratifications framework revealed that fulfilment of self (such as feeling good or as a fashion item) and social gratifications (such as contacting friends) underlies young people’s mobile phone behaviour. Importantly, in addition to the qualitative findings in Stage 1, the findings of the uses and gratifications study highlighted that further investigation of psychosocial factors in relation to mobile phone behaviour would be useful. The second stage of the research program also combined participants’ descriptions of their mobile phone behaviour with Brown’s (1993, 1997) behavioural addiction components to create the Mobile Phone Involvement Questionnaire. This approach resulted in the development of a reliable, parsimonious measure capturing the cognitive and behavioural aspects of young people’s mobile phone behaviour. An initial examination of young people’s mobile phone behaviour found that, although related,
young people’s frequency of mobile phone use was conceptually different to their level of mobile phone involvement. Young people’s involvement with their mobile phone was influenced by their self-identity and also if they received feelings of validation from others when using their mobile phone. In contrast, young people’s frequency of mobile phone use was only related to their self-identification as a mobile phone user. These findings provided an important indication that, in addition to self factors, other people influence young people’s involvement with their mobile phone.

The third stage of the research program extended the findings of the previous stages by examining empirically the psychosocial predictors of young people’s mobile phone behaviour. Specifically, this stage examined the role of self-identity, ingroup norm, the need to belong, and self-esteem for both young people’s frequency of mobile phone use and their mobile phone involvement. As in Stage 2, young people’s frequency of mobile phone use and their mobile phone involvement were influenced by different factors. Self-identity was the only psychosocial predictor of young people’s frequency of mobile phone use. In contrast, self-identity, ingroup norm, and the need to belong influenced young people’s level of involvement with their mobile phone. Additionally, it was revealed that the effect of self-esteem of young people’s mobile phone involvement was mediated by their need to belong. Results suggest that young people who perceive their mobile phone to be an integral part of their self-identity, who perceive that mobile phone use is common amongst friends and peers, and who have a strong need for attachment to others, in some cases driven by a desire to enhance their self-esteem, are most likely to become highly involved with their mobile phones. Thus,
Mobile phone involvement, rather than frequency of use, appears to be more strongly related to psychosocial factors.

Overall, the present research program provides an important contribution to our understanding of young Australians’ mobile phone behaviour by broadening our knowledge of factors influencing mobile phone behaviour beyond the approaches used in previous research. The development of MPIQ, combined with the adoption of a social psychological approach in the research program, provided a unique examination of what is a pre-eminent socially based behaviour among young people today. Results in the research program highlight the need to consider the psychosocial factors underlying young people’s mobile phone behaviour when seeking to develop programs to encourage appropriate mobile phone use in this cohort. Additionally, the present program of research raises important implications for the social development of youth who may develop a reliance on their mobile phone to enhance their relationships with others and to maintain or increase their sense of self-worth. Despite the positive benefits of mobile phone use being well established and supported throughout this research program, this thesis also identifies the characteristics of those young people at risk of developing an over-involvement with their mobile phone, potentially leading to negative consequences such as debt and dangerous driving. Given both the noted advantages and potentially damaging consequences of our attachment to mobile phones, future research should continue to examine people’s relationship with prevalent communication technologies to gain a rich understanding of the determinants and outcomes for both self and others as a result of social interactions via these media.
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APPENDIX A: STUDY 1 DATA COLLECTION TOOLS

Appendix A1: Participant Information and Consent Forms

**Participant information and consent form**

**Psychological factors differentiating appropriate and inappropriate mobile phone use.**

**Principal researcher**  Mrs Shari Walsh, PhD Candidate,  
School of Psychology and Counselling  
Ph: 3864 4654; 0400 197 133, Email: sp.walsh@qut.edu.au

**Principal supervisor**  Dr Katherine White, School of Psychology and Counselling  
Ph: 3864 4689, Email: km.white@qut.edu.au

**Description**  
This project is being undertaken as part of a PhD project for Shari Walsh. The purpose of this project is to improve understanding of psychological factors influencing people’s mobile phone use. The research team requests your assistance in providing information about mobile phone use.

**Participation**  
Your participation will involve a focus group discussion of approximately 1 hour in length. The focus groups will be audio recorded to assist in the transcription of the discussion. The principal researcher and her supervisor will be the only personnel with access the audio recordings. Audio recordings will be destroyed after transcription and no identifying information will be included on the transcript.

**Expected benefits**  
It is expected that this project will not benefit you directly. However, it may improve understanding of how to promote appropriate mobile phone use.

**Risks**  
There are no risks associated with your participation in this project.

**Confidentiality**  
All comments and responses will be treated confidentially. Following the focus group and audio recording, your anonymity will be maintained by removal of any identifying information from transcripts and data analysis. All transcripts will be stored in a locked filing cabinet.

**Voluntary participation**  
Your participation in this project is voluntary. If you do agree to participate, you can withdraw from participation at any time during the project without comment or penalty. Your decision to participate will in no way impact upon your current or future relationship with QUT.

**Questions / further information**  
Please contact the researchers if you require further information about the project, or to have any questions answered.
Concerns / complaints
Please contact the Research Ethics Officer on 3864 2340 or ethicscontact@qut.edu.au if you have any concerns or complaints about the ethical conduct of the project.

Psychological factors differentiating appropriate and inappropriate mobile phone use.

Statement of consent
By signing below, you are indicating that you:

• have read and understood the information sheet about this project;
• have had any questions answered to your satisfaction;
• understand that if you have any additional questions you can contact the research team;
• understand that you are free to withdraw at any time, without comment or penalty;
• understand that you can contact the research team if you have any questions about the project, or the Research Ethics Officer on 3864 2340 or ethicscontact@qut.edu.au if you have concerns about the ethical conduct of the project;
• understand that the project will include audio recording; and
• agree to participate in the project.

Name  ________________________________________________________________

Signature  _____________________________________________________________

Date  _____ / _____ / _____
Information sheet and consent form for minors and parents

Psychological factors differentiating appropriate and inappropriate mobile phone use.

Principal researcher  Mrs Shari Walsh, PhD Candidate, School of Psychology and Counselling Ph: 3864 4654; 0400 197 133, Email: sp.walsh@qut.edu.au

Principal supervisor Dr Katherine White, School of Psychology and Counselling Ph: 3864 4689, Email: km.white@qut.edu.au

Description
This project is being undertaken as part of a PhD project for Shari Walsh. The purpose of this project is to improve understanding of psychological factors influencing people’s mobile phone use. The research team requests your child’s assistance in providing information regarding their own and others mobile phone use within their age group.

Participation
Your child’s participation will involve a focus group discussion of approximately 1 hour in length. All focus groups will be audio recorded to assist in the transcription of the discussion. The principal researcher and her supervisor will be the only personnel with access the audio recordings.

Confidentiality
All comments and responses will be treated confidentially. During the focus group and audio recording, your child’s anonymity will be maintained by removal of any identifying information from transcripts and data analysis. Audio recordings will be destroyed after transcription transcripts will be stored in a locked filing cabinet.

Expected benefits
It is expected that this project will not benefit your child directly. However, it may improve understanding of how to promote appropriate mobile phone use amongst this age group.

Risks
There are no risks associated with your child’s participation in this project.

Voluntary participation
Your child’s participation in this project is voluntary. If you do agree for your child to participate, he or she can withdraw from participation at any time during the study without comment or penalty. The decision to participate will in no way impact upon your child’s current or future relationship with QUT.

Questions / further information
Please contact the research team if you require further information about the project, or to have any questions answered.

Concerns / complaints
Please contact the Research Ethics Officer on 3864 2340 or ethicscontact@qut.edu.au if you have any concerns or complaints about the ethical conduct of the project.
Consent form for participation of minors

Psychological factors differentiating appropriate and inappropriate mobile phone use.

Statement of Parent/Guardian consent

By signing below, you are indicating that you:

- have read and understood the information sheet about this project;
- have had any questions answered to your satisfaction;
- understand that if you or your child have any additional questions you can contact the research team;
- understand that you or your child are free to withdraw at any time, without comment or penalty;
- understand that you or your child can contact the research team if there are any questions about the project, or the Research Ethics Officer on 3864 2340 or ethicscontact@qut.edu.au if they have concerns about the ethical conduct of the project; and
- understand that the project will include audio and/or video recording; and
- agree to your child’s participation in the project.

Name

________________________________________________________

Signature

________________________________________________________

Date

_____ / _____ / _____

Statement of Child consent

Your parent or guardian has given their permission for you to be involved in this research project. This form is to seek your agreement to be involved.

By signing below, you are indicating that you agree to participate in the project.

Name

________________________________________________________

Signature

________________________________________________________

Date

_____ / _____ / _____
Appendix A2: Focus Group Discussion Guide

Introduction (10 min)

- Greeting

Warm up – I am interested in what kinds of things are important to young people today. Technology is an important part of young people’s lives. Today we would like to talk about specific aspects in relation to mobile phones. Young people are experts in technology as you have grown up with it, especially mobile phone, so I am very interested in your opinion.

- Purpose of focus group

Your participation in this focus group will provide valuable information about reasons for mobile phone use and different types of mobile phone use. This information will be extremely useful in assisting in the development of a comprehensive research program investigating mobile phone use. So please participate fully in the discussion.

- Ground rules

  o Moderator - Role of moderator is to facilitate conversation by asking questions, probing for further information and guiding the discussion.
  o Audio – recording - Focus group is being recorded so that we are not relying on my memory.
  o Confidentiality – all information is confidential and your participation is anonymous. No names will be disclosed and tapes will be destroyed once transcribed. All data will be securely stored with no identifying information on.
  o Individual opinions – no right or wrong answers so please be honest in your responses. Respect each others opinions even if it is not our own.
  o Speak one at a time and as clearly as possible.

- Get acquainted activity

  o Name, age, occupation/school, how long had phone, best thing about your phone

General use questions (10 min)

In general, what do you mainly use your mobile phone for?

What function e.g. SMS or calling do you use most in order to communicate with other people? Why?

What are the advantages of each?

Any disadvantages?

What other things do you use your phone for? e.g. voting via your mobile phone for shows such as Big Brother, Australian Idol? Is that a regular activity? Why?
Have you ever changed to a different carrier (e.g. from Optus to Telstra)? What reasons led you to change?

What is average monthly phone bill?

Questions re emotions and mp use (10 min)

On average, how many times a day do you use your phone?

Have you noticed whether there is a pattern, in that, you use your mobile phone use more or less with some moods? for instance - We all have ups and downs in life. There are times that we don’t feel good and other times that we feel great. (e.g. depressed? anxious? excluded? Worried, happy? Excited?) What might be the reason for this?

What about when you have news to share for example, if you have heard some bad news, do you immediately call or SMS someone or would you choose some other way to talk to them? What about good news?

Some people say that using their mobile phone makes them feel good. What about you, have you ever felt good using your mobile phone? What is it about using your mobile phone that makes you feel good?

Questions re problems arising from use (10 min)

You hear stories of people who get into trouble from using their mobile phone too much (e.g. financial difficulties) or in situations where they shouldn’t (like driving). Do you know of anyone who has experienced problems from using their mobile phone (stress not with the phone)? Can you describe what happened?

What about you? Have any of you ever got into any trouble or experienced any problems as a result of using your mobile phone?

In what way?

Can you describe what led to the problem?

How did you sort it out?

Have you tried to cut down on your mobile phone use?

If unsuccessful, what was so hard about reducing how much you used your phone?

Questions re compulsive use (15 - 20 min)

I’d like you think about situations when you are requested not to use mobile phones, such as in class, at work or in the movies.
In those situations, what do you do with your mobile phone?
Are you able to turn your phone off?
How do you feel when your phone is off?

What about if your phone rings or you get an SMS and you don’t answer it because you are with someone or in a situation where you can’t (e.g. movie)…
Are you able to put your mobile phone out of your head?
What are you thinking?

**Are there some times that you can’t stop thinking about your mobile phone?**
How often does that occur?
What could be the reason for that?
Can you describe the situation and what you are thinking? (e.g. waiting for a call from someone)

**I would like you to think of a situation you have been in when you have not been able to use your mobile phone …
Can you describe the situation?
What thoughts went through your head?
How did you feel in that situation?

In those circumstances when you are unable to use your phone, e.g. cinema, school, how do you feel?
Is it difficult to not use your phone?
What is difficult about being unable to use your phone?

**If you were without your mobile phone for the next few days, what would you be feeling/thinking?**

Sometimes you hear people say that they couldn’t live without their mobile phone.
Have you ever thought that?
What about being worried that you may become overly dependent on your phone? Is that a concern?

Do you think it is possible for some people to become addicted to their mobile phone?
How would I know they were?
What sort of things would they be doing?

On the other hand, there are some people who don’t have a mobile phone.
Do you know anyone who doesn’t have a mobile phone?
What are your thoughts on that?
How would/do you contact them?
Finally, *Can I ask what you did with your mobile phone tonight?*
Turned off, silent, left on??
Why?? How feeling?

Any questions?

Thank you all very much for your participation. I greatly appreciate your time and involvement.
APPENDIX B: STUDY 2 DATA COLLECTION TOOLS

Appendix B1: Participant Information and Consent Forms

**Participant information and consent form**

**Psychosocial factors differentiating appropriate and inappropriate mobile phone use.**

**Principal researcher**  Mrs Shari Walsh, PhD Scholar, School of Psychology and Counselling
Ph: 3864 4881; 0400 197 133, Email: sp.walsh@qut.edu.au

**Principal supervisor**  Dr Katherine White, School of Psychology and Counselling
Ph: 3864 4689, Email: km.white@qut.edu.au

**Description:**  This project is being undertaken as part of a PhD project for Shari Walsh. The purpose of this project is to improve understanding of psychological factors influencing mobile phone use amongst people aged 15 – 24 years. The research team requests your assistance in providing information about your mobile phone use. To thank you for your participation, you will be entered into a prize draw to win your choice of a double movie pass or a $20 shopping voucher. The prize draw will be conducted following the completion of data collection.

**Voluntary Participation:** Your participation will involve completion of a questionnaire at school; home; work; on campus (delete as relevant). Participation is expected to take approximately 20 minutes. All participation in this project is voluntary. If you do agree to participate, you can withdraw from participation at any time during the project without comment or penalty. Your decision to participate will in no way impact upon your current or future relationship with QUT.

**Confidentiality:** All comments and responses are anonymous and will be treated confidentially. The names of individual persons are not required in any of the responses and no identifying data will be collected. The principal researcher and her supervisor will be the only personnel with access the completed questionnaires which will be stored in a secure location. All responses will be analysed and reported in the aggregate form so that no single participant is identifiable.

**Expected benefits:** It is expected that this project will not benefit you directly. However, it may improve understanding of how to promote appropriate mobile phone use.

**Risks:** There are no known risks associated with your participation in this project.

**Questions / further information:** Please contact the researchers if you require further information about the project, or to have any questions answered.

**Concerns / complaints:** Please contact the Research Ethics Officer on 3864 2340 or ethicscontact@qut.edu.au if you have any concerns or complaints about the ethical conduct of the project.

**Informed consent:** Completion and return of the questionnaire will be accepted as informed consent to participate.
Psychological factors differentiating appropriate and inappropriate mobile phone use.

Principal researcher  Mrs Shari Walsh, PhD Scholar, School of Psychology and Counselling
Ph: 3864 4881; 0400 197 133, Email: sp.walsh@qut.edu.au

Principal supervisor  Dr Katherine White, School of Psychology and Counselling
Ph: 3864 4689, Email: km.white@qut.edu.au

Description:

This project is being undertaken as part of a PhD project for Shari Walsh. The purpose of this project is to improve understanding of psychological factors mobile phone use amongst people aged 15 – 24 years. The research team requests your child’s assistance in providing information regarding their mobile phone use. To thank your child for their participation, they will be given an entry into a prize draw to win either a double movie pass or a $20 shopping voucher. The prize draw will be conducted following the completion of data collection.

Voluntary Participation:

Your child’s participation will involve completion of a questionnaire at school. Participation is expected to take approximately 20 minutes and completion of the questionnaire will indicate your child’s consent to participate. Your child’s participation in this project is voluntary. If you do agree for your child to participate, he or she can withdraw from participation at any time during the study without comment or penalty. The decision to participate will in no way impact upon your child’s current or future relationship with QUT or their school.

Confidentiality:

All comments and responses are anonymous and will be treated confidentially. The names of individual persons are not required in any of the responses and no identifying data will be collected. The principal researcher and her supervisor will be the only personnel with access the completed questionnaires which will be stored in a secure location. All responses will be analysed and reported in the aggregate form so that no single participant is identifiable.

Expected benefits:

It is expected that this project will not benefit your child directly. However, it may improve understanding of how to promote appropriate mobile phone use amongst this age group.

Risks:

There are no known risks associated with your child’s participation in this project.

Questions / further information:

Please contact the research team if you require further information about the project, or to have any questions answered.

Concerns / complaints:

Please contact the Research Ethics Officer on 3864 2340 or ethicscontact@qut.edu.au if you have any concerns or complaints about the ethical conduct of the project.
Statement of Parent/Guardian consent

By signing below, you are indicating that you:

- have read, understood and discussed the information sheet about this project with your child;
- have had any questions answered to your satisfaction;
- understand that if you or your child have any additional questions you can contact the research team;
- understand that you or your child are free to withdraw at any time, without comment or penalty;
- understand that you or your child can contact the research team if there are any questions about the project, or the Research Ethics Officer on 3864 2340 or ethicscontact@qut.edu.au if they have concerns about the ethical conduct of the project; and
- agree to your child’s participation in the project.

Name

________________________________________________________________________________________

Signature

________________________________________________________________________________________

Date

_____ / _____ / _____

Student/Minor consent

Completion and return of the questionnaire will be accepted as your child’s informed consent to participate
Appendix B2: Study 2 Questionnaire

Psychological factors differentiating appropriate and inappropriate mobile phone use.

CONFIDENTIAL

Thank you for participating in this study. Your answers to the questions are anonymous and will not be used for any other purposes than the present research. Some questions may appear repetitive however; a slightly different piece of information is being requested in each. Please read the instructions carefully and answer each item honestly. After reading each question, write the response or circle the number that best represents your opinion. There are no right or wrong answers. All questions are voluntary. If you have any queries or comments regarding the questionnaire, please contact the Chief Investigator, Mrs Shari Walsh on (07) 3864 4654 or Dr Katy White on 3864 4689.

Please note – you must be aged between 15 and 24 and use a mobile phone to be eligible to participate in this study.

Firstly, do you use a mobile phone? □ Yes Please continue □ No Please do not continue

SECTION ONE: Demographic Information

Please tell us about yourself. The information will not be used for identification purposes but will help describe the characteristics of people who completed these questionnaires.

1. Gender □ Male □ Female

2. Age _______ years If you are under 15 or over 24, please do not continue.

3. What is your current relationship status? Please tick one option. □ Single □ Dating □ Married □ De-facto □ Divorced

4. Do you live? Please tick one option. □ By myself □ With parent/s (family) □ With friends/flatmates □ With partner □ With partner and children □ With children (no partner)

5. Do you have a landline where you live? □ Yes □ No

6. What is the highest level of education you have completed? Please tick one option. □ Grade 10 □ Grade 12 □ Diploma/Trade Certificate □ Undergraduate degree □ Post-graduate degree □ Other __________________

7. Which best describes your current work/student status? Please tick all relevant boxes.
<table>
<thead>
<tr>
<th>7a. If you are currently a student – What type of institute do you attend? Please tick one option.</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Catholic/religious school</td>
</tr>
<tr>
<td>□ Independent school</td>
</tr>
<tr>
<td>□ State school</td>
</tr>
<tr>
<td>□ Tafe college</td>
</tr>
<tr>
<td>□ Private college</td>
</tr>
<tr>
<td>□ University</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7b. If you are currently working - Which best describes your occupation? Please tick one option.</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Hospitality</td>
</tr>
<tr>
<td>□ Sales</td>
</tr>
<tr>
<td>□ Office/clerical</td>
</tr>
<tr>
<td>□ Trade</td>
</tr>
<tr>
<td>□ Manager</td>
</tr>
<tr>
<td>□ Professional</td>
</tr>
<tr>
<td>□ Other ________________________________</td>
</tr>
</tbody>
</table>

8. On average, how much do you earn each week after-tax? $_______

SECTION 2: Please complete the following information.

2.1 Approximately how long have you had a mobile phone? _____ years; _____ months

2.2 What type of mobile phone plan do you have? Please tick one option.

| □ None |
| □ Pre-paid |
| □ Pre-paid plan $ _______ per month |
| □ Monthly plan $ _______ per month |

2.3 Are there any benefits with this plan? For example, free calls after 8 or call/SMS credit

□ No  □ Yes - Please describe ________________________________

2.4 On average, how much would you spend on your mobile phone each month? $_________

2.5 Who generally pays your mobile phone bill? Please tick one option.

| □ I do |
| □ My parents |
| □ My partner |
| □ My employer |
| □ Other _________ |

2.6 On average, how much do you use your mobile phone for business or personal purposes? Please tick one option.

| □ All business |
| □ Mainly business |
| □ Approximately equal |
| □ Mainly personal |
| □ All personal |

2.7 On average, number on each line. Please write one

| How many calls would you make on your mobile phone per day? |
|__________________________________________________________|
| How many calls would you receive on your mobile phone each day? |
|________________________________________________________________|
| How many SMS would you send on your mobile phone each day? |
|________________________________________________________________|
| How many SMS would receive on your mobile phone each day? |
|________________________________________________________________|
2.8 There are some times when we use our mobile phone more than others. Do you use your mobile phone:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>No difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>More when you are out than when you are at home?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More at night-time than daytime</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More on weekends than weekdays</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the past month, what would be the most calls or SMS you have made on your mobile phone in one day?

<table>
<thead>
<tr>
<th></th>
<th>Calls</th>
<th>SMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.9 How often do you call the following people on your mobile phone?

*Please circle one option on each line.*

<table>
<thead>
<tr>
<th></th>
<th>More than once a day</th>
<th>Daily</th>
<th>1 or 2 times a week</th>
<th>1 or 2 times a month</th>
<th>1 or 2 times in six months</th>
<th>Once a year</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Close friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Wider social network</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Work/employer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>

2.10 How often do you SMS the following people on your mobile phone?

*Please circle one option on each line.*

<table>
<thead>
<tr>
<th></th>
<th>More than once a day</th>
<th>Daily</th>
<th>1 or 2 times a week</th>
<th>1 or 2 times a month</th>
<th>1 or 2 times in six months</th>
<th>Once a year</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Close friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Wider social network</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Work/employer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>

2.11 On average, how long would you spend using your mobile phone each day?

_____ hours, _____ minutes
2.12 The following lists various activities that you can perform using your mobile phone.

<table>
<thead>
<tr>
<th>Activity</th>
<th>More than once a day</th>
<th>Daily</th>
<th>1 or 2 times a week</th>
<th>1 or 2 times a month</th>
<th>1 or 2 times in six months</th>
<th>Once a year</th>
<th>Never</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the phone/address book</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Download a ring-tone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Video</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Vote on a television programs/enter a competition</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Send MMS (multi-media messaging service)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Set an alarm/reminder</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Use the calculator</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Take a photo</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Purchase wallpaper/screensaver</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Check the time</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Send/receive email</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Play a game</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Get a sport update</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Access the internet</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Other (please describe)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
</tbody>
</table>
SECTION 3: The following are some statements people may use to describe their mobile phone use. When answering the questions please think about your overall mobile phone use, including sending and receiving calls, SMS or MMS, or using other features of your phone such as camera, games, or personal organiser.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I use my mobile phone when I am bored.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The thought of being without my mobile phone makes me feel distressed.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using my mobile phone does not interfere with my other daily activities.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I never turn my mobile phone off.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I want to spend more time using my mobile phone.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not regularly upgrade my mobile phone to a newer model.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have spent more than I can afford on my mobile phone.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
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<tr>
<td>I feel valued when I receive lots of mobile calls or messages.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>I feel lost without my mobile phone.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>Receiving mobile phone calls or messages does not make me feel special.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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<tr>
<td>I lose track of how much I am using my mobile phone.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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<tr>
<td>I do not get excited when someone contacts me on my mobile phone.</td>
<td>1 2 3 4 5 6 7</td>
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</tr>
<tr>
<td>I hide how much I use my mobile phone from those people closest to me.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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</tr>
<tr>
<td>I often think about my mobile phone when I am not using it.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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</tr>
<tr>
<td>I am concerned that I rely too much on my mobile phone.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>I feel uneasy when I am not able to use my mobile</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Statement</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Somewhat disagree</td>
<td>Neither agree nor disagree</td>
<td>Somewhat agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>I keep checking my mobile phone for messages or calls.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using my mobile phone is very important to me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I sometimes have an overwhelming desire to use my mobile phone.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Arguments have arisen with others because of my mobile phone use.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I find it difficult to refrain from using my mobile phone in places where it is expected that I not use it (e.g. in classes, lectures, cinemas etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel alone when I cannot use my mobile phone.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel as though a part of me is missing when I am without my mobile phone.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Even if I know I have not been contacted on my mobile phone, I check it anyway.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I cannot imagine life without my mobile phone.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I get excited when I hear my mobile phone ring/receive a text message.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I am concerned that I am addicted to my mobile phone.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I have been unable to reduce my mobile phone use.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Receiving a phone call or message makes me feel loved.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>The first thing I do in the morning is check my mobile phone for messages or missed calls.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I often use my mobile phone for no particular reason.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I interrupt whatever else I am doing when I am</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
How much do you agree with the following statements in relation to your mobile phone use?

*Please circle one option on each line.*

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>contacted on my mobile phone.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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</tr>
<tr>
<td>I keep my mobile phone close to me in case I am contacted when I am sleeping.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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</tr>
<tr>
<td>I find it hard to control my mobile phone use.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>I feel connected to others when I am using my mobile phone.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>I do not think that I am addicted to my mobile phone.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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</tr>
<tr>
<td>I often use my mobile phone to contact others for no particular reason.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Other people have told me they are concerned with how much I use my mobile phone.</td>
<td>1 2 3 4 5 6 7</td>
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</tr>
</tbody>
</table>

Please turn the page
### SECTION 4: The following are some reasons people use their mobile phones. How much do you agree with the following statements?

<table>
<thead>
<tr>
<th>I use my mobile phone</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>To chat or gossip.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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<tr>
<td>As a fashion accessory.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To let others know where I am.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To relax.</td>
<td>1 2 3 4 5 6 7</td>
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</tr>
<tr>
<td>To be contactable in case of an emergency.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To arrange transport.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To let others know I care for them.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To stay in touch with people I don’t see much.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To plan social activities.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>Because it is cool.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To contact my friends.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To stay in touch with family.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To be available at all times.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>For entertainment.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>For a sense of security.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>Because I enjoy being in contact with other people.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To make appointments.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To pass time.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To be able to contact others in emergency.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To get news and information.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>Because it makes me feel good.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>For fun.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To keep up-to-date with what’s going on for other people.</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>To look stylish.</td>
<td>1 2 3 4 5 6 7</td>
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</tbody>
</table>

That is the end of the questionnaire. Thank you for your time and honesty. Your assistance is greatly appreciated.
APPENDIX C: STUDY 3 DATA COLLECTION TOOLS

Appendix C1: Introductory Page to Survey Website

Front page of mobilephonestudy.com

Welcome to the study on

Psychological factors influencing mobile phone use amongst Australian youth.

- Only people aged 16 - 24 years are eligible to participate
- It will take approximately 15 minutes to complete and you will remain anonymous
- You could win one of 5 $20 shopping vouchers.

Are you aged between 16 & 24 years?
  No – goes to page – I’m sorry but you are unable to participate in this survey.

Yes – goes to surveymaker site

Surveymaker site
Login – 3 letters from A – Z
  Any 3 numbers
Appendix C2: Participant Information Form

Principal researcher  Mrs Shari Walsh, PhD Scholar,  School of Psychology and Counselling, Queensland University of Technology  
Ph: 3138 4881;  0400 197 133,  Email: sp.walsh@qut.edu.au

Principal supervisor  Dr Katherine White, School of Psychology and Counselling, Queensland University of Technology  
Ph: 3138 4689,  Email: km.white@qut.edu.au

Description
This project is being undertaken as part of a PhD project for Shari Walsh. The purpose of this project is to improve understanding of psychological factors influencing mobile phone use amongst people aged 16 – 24 years. 
To thank you for your participation, you will be entered into a prize draw to win a $20 shopping voucher. The prize draw will be conducted following the completion of data collection.

Voluntary Participation
Your participation will involve completion of an on-line questionnaire. Participation is expected to take approximately 15 minutes. All participation in this project is voluntary. If you do agree to participate, you can withdraw from participation at any stage. Your decision to participate will in no way impact upon your current or future relationship with QUT.

Confidentiality
All comments and responses are anonymous and will be treated confidentially. The names of individual persons are not required in any of the responses and no identifying data will be collected. The principal researcher will be the only person with access to the survey responses. All responses will be analysed and reported in the aggregate form so that no single participant is identifiable.

Expected benefits
It is expected that this project will not benefit you directly. However, it may improve understanding of how to promote appropriate mobile phone use.

Risks
There are minimal risks associated with your participation in this project.

Questions / further information
Please contact the researchers if you require further information about the project, or to have any questions answered.

Concerns / complaints
Please contact the Research Ethics Officer on 3138 2340 or ethicscontact@qut.edu.au if you have any concerns or complaints about the ethical conduct of the project.

Informed consent
Completion of the survey will be accepted as informed consent to participate.
Appendix C3: Study 3 Questionnaire

**Psychological factors influencing mobile phone use amongst Australian youth**

<table>
<thead>
<tr>
<th>How old are you?</th>
<th>□ 16 □ 17 □ 18 □ 19 □ 20 □ 21 □ 22 □ 23 □ 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you are under 16 or over 24, please do not continue.</td>
<td></td>
</tr>
</tbody>
</table>

Please indicate your gender

- □ Male
- □ Female

The following questions ask about your mobile phone use. Please answer as accurately as possible.

**Approximately how long have you had a mobile phone?**

- □ Less than 1 year
- □ 1 year
- □ 2 years
- □ 3 years
- □ 4 years
- □ 5 years
- □ 6 years
- □ 7 years
- □ 8 years
- □ 9 years
- □ 10 years
- □ More than 10 years

**What type of mobile phone plan do you have?** e.g., prepaid/plan; cap; $ per month

On average, how much money do you **spend** on your mobile phone each month? $__________

On average, please write one number on each line.

<p>| How many <strong>calls</strong> would you <strong>make</strong> on your mobile phone per day? | _________ |
| How many <strong>calls</strong> would you <strong>receive</strong> on your mobile phone each day? | _________ |
| How many <strong>SMS</strong> would you <strong>send</strong> on your mobile phone each day? | _________ |
| How many <strong>SMS</strong> would <strong>receive</strong> on your mobile phone each day? | _________ |
| How many times a day do you use your mobile phone for something other than calls or SMS? | _________ |</p>
<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I interrupt whatever else I am doing when I am contacted on my mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I often use my mobile phone for no particular reason</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel connected to others when I am using my mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Arguments have arisen with others because of my mobile phone use</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I lose track of how much I am using my mobile phone.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I have been unable to reduce my mobile phone use</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>The thought of being without my mobile phone makes me feel distressed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I often think about my mobile phone when I am not using it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I get excited when I hear my mobile phone ring/ receive a text message</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I am concerned that I rely too much on my mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel anxious when I am unable to use my mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel lost without my mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>The first thing I do in the morning is check my mobile phone for messages or missed calls</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I find it hard to control my mobile phone use</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Statement</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Somewhat disagree</td>
<td>Neither agree nor disagree</td>
<td>Somewhat agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
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<td>----------------</td>
</tr>
<tr>
<td>I have spent more than I can afford on my mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I hide how much I use my mobile phone from those people closest to me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I keep checking my mobile phone for messages or calls</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Other people have told me they are concerned with how much I use my mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I am concerned that I am addicted to my mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I sometimes have an overwhelming desire to use my mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I cannot imagine life without my mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>My mobile phone use interferes with my other daily activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I use my mobile phone in places where I am asked not to use it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I use my mobile phone at increasingly higher levels</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I enjoy using my mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Question</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Somewhat disagree</td>
<td>Neither agree nor disagree</td>
<td>Somewhat agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
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<td>-------------------</td>
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</tr>
<tr>
<td><strong>Thinking of yourself...</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>How much do you agree with the following statements?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being a mobile phone user is an important part of who I am</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I would feel lost without using my mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I am the type of person to use a mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td><strong>Thinking about your friends and peers...</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>How much do you agree with the following statements?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I identify strongly with my friends and peers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>My friends and peers would think that using a mobile phone is a good thing to do</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I fit in well with my friends and peers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Most of my friends and peers use a mobile phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel strong ties with my friends and peers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I see myself as belonging to my friends and peers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>My friends and peers would agree that using a mobile phone is a good thing to do</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Mobile phone use is common amongst my friends and peers</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
Below is a list of statements dealing with your general feelings about yourself. Please select the most appropriate response for each statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the whole, I am satisfied with myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>At times, I think I am no good at all</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I feel that I have a number of good qualities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I am able to do things as well as most other people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I feel I do not have much to be proud of</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I certainly feel useless at times</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I feel that I'm a person of worth, at least on an equal plane with others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I wish that I could have more respect for myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>All in all, I am inclined to feel that I am a failure</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I take a positive attitude toward myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Thinking about the social groups you are in. How much do you agree with the following statements?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am a worthy member of the social groups I belong to</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel I don't have much to offer to the social groups I belong to</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I am a co-operative participant in the social groups I belong to</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I often feel I'm a useless member of my social group</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I often regret that I belong to some of the social groups I do</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>In general, I'm glad to be a member of the social groups I belong to</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Overall, I often feel that the social groups of which I am a member are not worthwhile</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I feel good about the social groups I belong to</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Overall, my social groups are considered good by others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Most people consider my social groups, on the average, to be more ineffective than other social groups</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
### Thinking about the social groups you are in.

How much do you agree with the following statements?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general, others respect the social groups that I am a member of.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>In general, others think that the social groups I am a member of are unworthy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Overall, my group memberships have very little to do with how I feel about myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>The social groups I belong to are an important reflection of who I am</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>The social groups I belong to are unimportant to my sense of what kind of person I am</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>In general, belonging to social groups is an important part of my self image</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

### The following questions ask how you relate to others.

Please indicate how much each statement is characteristic of you.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Very</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>If other people don't seem to accept me, I don't let it bother me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I try hard not to do things that will make other people avoid or reject me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I seldom worry about what other people care about me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I need to feel that there are people I can turn to in times of need</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I want other people to accept me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I do not like being alone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Being apart from my friends for long periods of time does not bother me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I have a strong &quot;need to belong&quot;</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>It bothers me a great deal when I am not included in other people's plans</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>My feelings are easily hurt when I feel that others do not accept me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Please tell us about yourself. These questions will help describe the type of people who completed these questionnaires.

**What is the highest level of education you have completed?**
- ☐ Grade 10
- ☐ Grade 11
- ☐ Grade 12
- ☐ Diploma/Trade Certificate
- ☐ Undergraduate degree
- ☐ Post-graduate degree

**Do you work?**
- ☐ Full-time
- ☐ Part-time
- ☐ Unemployed
- ☐ Home duties

**What is your main occupation?**
- ☐ Student
- ☐ Home duties
- ☐ Hospitality
- ☐ Sales
- ☐ Office/clerical
- ☐ Trade
- ☐ Manager
- ☐ Professional
- ☐ Not currently working

**If you are currently a student, do you attend**
- ☐ Private high school
- ☐ State high school
- ☐ Tafe/ trade college
- ☐ Private college
- ☐ University
- ☐ Not currently studying

**What is your current relationship status?**
- ☐ Single
- ☐ Dating
- ☐ Married
- ☐ De-facto
- ☐ Divorced

**In which state/territory do you live?**
- ☐ Queensland
- ☐ New South Wales
- ☐ Victoria
- ☐ South Australia
- ☐ Western Australia
- ☐ Tasmania
- ☐ Northern Territory
- ☐ Australian Capital Territory
- ☐ Not currently working

**Finally,**
**What are the 3 WORST things about using a mobile phone?**

**and**
**What are the 3 BEST things about using a mobile phone?**

Thank you for participating in the study. You will now be directed to another site where you can enter in the draw for a $20 shopping voucher.
Your name and contact details cannot be linked to your survey responses.
Mobile phone survey prize entry

Prize entry address

Login – Any 3 numbers
3 letters from A - Z

Thanks for completing the survey about mobile phone use.
To be entered into the draw for a $20 shopping voucher, please complete the following details.
This information cannot be linked to your survey responses.

Good luck in the prize draw.

If you have any queries or would like any information regarding the survey, please feel free to contact me. My email address is sp.walsh@qut.edu.au

Thanks
Shari
APPENDIX D: STATEMENTS OF CONTRIBUTION FROM CO-AUTHORS