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**Associations between social anxiety disorders and the social aspects of  
young people's Internet and mobile phone use**

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1 1 OCT 2006

# **Associations between social anxiety disorders and the social aspects of young people's Internet and mobile phone use**

**Dominic Madell**

## **Abstract**

This thesis investigates young people's use of the Internet and mobile phones, and focuses especially on associations between use of these technologies for communication purposes and social anxiety. First, two surveys are reported which examine the broad characteristics of young people's Internet and mobile phone use. The first of these was conducted on paper and provides a general description of these activities amongst young people in the Teesside area of England. The second survey was conducted online with a population from a wider area and supports the paper survey. Together, the surveys indicate that there may be a small bias towards male use of and competence with the Internet. There may also be a small bias towards female use of mobile phones. Results concerning non-use of the Internet and mobile phones are also discussed. Reports of the surveys are followed by descriptions of a questionnaire study, also conducted in the Teesside area of England, which indicates that associations between the psychological conditions social anxiety and social phobia and use of the Internet and mobile phones, generally, and for communication purposes, are minimal. (However, small but significant associations are discussed). Finally, a focus group study of young people's Internet and mobile phone use, which was conducted using Grounded Theory, is described. This reveals that that control over social interactions, sometimes in relation to transient, or situational, social anxiety, might be one important reason why young people like to use text-based Internet and mobile phone communication media to interact. It is concluded that whilst social anxiety as a psychological characteristic, or trait, may not be strongly related to young people's use of the Internet and mobile phones for communication purposes, young people may nevertheless sometimes use these technologies to manage situational social anxiety.

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## **Declaration**

None of this material has previously been submitted for a degree in this or any other university.

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**Associations between social anxiety disorders  
and the social aspects of young people's  
Internet and mobile phone use**

## **Chapter 1**

### **Introduction and Literature Review**

#### **Introduction**

This thesis is concerned with young people's use of the Internet and mobile phones and its specific focus is how the psychological conditions of shyness, or social anxiety, and social phobia relate to their use of these technologies for communication purposes. The following introduction describes why this subject was selected for study, and also explains the thesis' structure.

The Internet presented itself as an interesting area for research because it was (when research for this thesis was started), and still is, so topical in the media, being a new and popular technology. However, stories often seemed to focus on negative or controversial issues associated with the Internet, such as paedophilia (Poulter, 2003; Carr, 2001; Nash, 2005), hacking (Hirst, 2005), and children copying schoolwork or viewing pornographic or violent material (Revell, 2005). It was hoped that whilst the negative aspects of Internet use would not be ignored in researching this thesis, some of the positive aspects of the use of this technology by young people would also emerge. Ultimately, this certainly turned out to be the case.

It was decided to research issues associated with mobile phone use alongside the Internet, first, because the mobile phone is another technology that has become extremely popular in recent years. In 2002, the number of mobile phone subscribers overtook the number of fixed-line subscribers globally (Srivastava, 2005). In addition, it was also decided to research the

Internet and mobile phones together because convergence between these technologies is happening and is likely to continue to happen (Nilsson, Nuldén, and Olsson, 2001; Standage, 2001; Wooldridge, 1999). For example, even at the start of research for this thesis in 2001, WAP (Wireless Application Protocol) technology was available on mobile phones, which allows one to access the Internet via a mobile handset. Of course it is also the case that the Internet shares another function in common with mobile phones, which is that both can be used for communication.

Young people were chosen as the demographic group for consideration because, as will be discussed in more detail later in this Chapter, this group has been under-investigated in regard to Internet and mobile phone use. Young people have also been selected as the target group for research as it can be argued that they are likely to be the Internet and mobile phone users of the future. In regard to Internet use in particular, there is evidence that a disproportionate number of Internet nonusers tend to be from the older generation. In fact, in 2001 it was stated that only 15 percent of those over the age of 65 had access to the Internet, whilst 56 percent of all Americans were Internet users (Fox, 2001). Lenhart (2000) has referred to this as the 'gray gap', and has also stated that adults with children are more likely to have Internet access. This means that adults of the future are likely to have grown up with on-line availability.

### **Structure of the thesis and reasons for selection of research topic**

There is a particular rationale behind the way that research for this thesis was conducted, and it is hoped that the thesis' structure reflects this. The specific

content of chapters will be discussed in more detail momentarily, but for now the logic behind the overall structure of this composition will be described. Earlier chapters of the thesis report survey research which investigates the importance of sociological factors, such as gender and ethnicity, on how young people use the Internet and mobile phones. Surveys were chosen to investigate these factors as they were considered broad in scope, and so would require large numbers of participants to be recruited for proper consideration. It was considered necessary to pursue the 'sociological' line of enquiry as past researchers have suggested that the ways in which groups of people use modern technology is often affected by their demographic characteristics, for example, see a discussion of the digital divide by Katz and Rice (2002).

Later chapters of the thesis discuss how psychological factors might influence the ways that young people use the Internet and mobile phones. Preliminary chapters of these employed survey methodology for their investigation as they required large numbers of participants to be studied. The reason for the exploration of psychological factors was that it was felt that having examined how sociological characteristics might influence young people's use of the Internet and mobile phones, the ways in which differences between individuals themselves could influence use of these technologies should also receive attention. Specifically, whether the psychological characteristics of social anxiety and social phobia were related to use of the Internet and mobile phones was investigated, for reasons which will be discussed shortly.

Finally, towards the end of the thesis, some focus-group research is discussed. It was considered that focus groups would be an appropriate final technique for understanding how young people use the Internet and mobile phones because, unlike the quantitative methodologies used for other parts of the thesis, focus groups produce qualitatively in-depth data. In particular, it was believed that the collection of these kinds of results would allow a fuller picture of the factors which are important to young people's use of the Internet and mobile phones to emerge and would allow young people to offer their own reasons for their Internet and mobile phone use. Further discussion of focus group methodology is included later in this chapter.

So, to discuss the structure of individual chapters more specifically: as well as containing this introduction, Chapter 1 contains a review of literature associated with young people's use of the Internet and mobile phones generally and how this relates to gender differences, a subject which was chosen for consideration because of its importance to issues of equity, as will be discussed shortly. Furthermore, Chapter 1 discusses theoretical material and research concerning how use of the Internet and mobile phones might be related to the psychological conditions social anxiety and social phobia.

Chapters 2 and 3 of this thesis presents research which can be considered to have a 'sociological' angle (as will be discussed in more detail shortly), as it examines how young people use the Internet and mobile phones in their everyday lives. It was felt that it was important to understand how young people use these technologies, first, because whilst it was suspected that the Internet and mobile phones would be significant in the lives of young people, it was important to investigate to what degree this was the case. In

addition, it was also felt important to have a broad understanding of young people's use of these technologies before attempting to research more detailed aspects of their Internet and mobile phone use later in the thesis.

Thus, Chapter 2 is a report of a paper questionnaire survey and Chapter 3 is a report of an identical online survey that were used to investigate this subject. The paper survey was conducted between February and May 2002 at schools in the Teesside area of England. Few surveys of young people's Internet and mobile phone use had been conducted in the UK so it was hoped that this would go some way to rectifying this deficit. Furthermore, the ways in which these technologies are used by young people can change frequently, so there is a constant need for updated survey data. The online survey reported in Chapter 3 was conducted between February 2003 and April 2004, and is identical in form to the paper survey described in Chapter 2. This survey was administered to support the paper version, and so, along with a description of the online survey, Chapter 3 reports the similarities and differences between findings from the online and paper versions. In addition, some issues associated with online data collection are examined which may have affected the results from the online survey. Finally, gender differences in Internet and mobile phone use revealed by both surveys receive considerable attention throughout Chapters 2 and 3.

Later chapters of this thesis 'dig deeper' into the subject of young people's Internet and mobile phone use and discuss whether certain psychological characteristics are related to these activities. Thus, Chapter 5 examines if social anxiety and social phobia are associated with Internet and mobile phone use amongst young people. The reasons that these conditions

were selected for examination will now be described. At the time when ideas for the topic of the thesis were being generated, there was some concern from researchers about the potential negative effects of the Internet on social well-being. For example, Kraut et al. (1998) and Nie and Erbring (2000) reported evidence that appeared to indicate that those that use the Internet become socially withdrawn and experience negative psychological symptoms.

However, these studies were criticized: Baym (2002) stated that Nie and Erbring's study had been challenged 'for its leading questions, for offering no assessment of the magnitude of reported reductions in social contact, and for assuming all online activities are "non-social"' (p.72). McKenna, Green and Gleason (2002) also argued that Nie and Erbring's conclusions were based on only 4.3 percent of the total sample. Furthermore, Kraut et al. themselves stated that the findings of their 1998 study were not necessarily generalisable across different groups of people and over time (Kraut et al., 2002), and, in a follow-up study of their 1998 respondents conducted three years later, Kraut et al. (2002) found that most of the negative effects of the Internet had disappeared.

Also, other studies made positive findings in relation to Internet use and social well-being. Katz and Aspden (1997) did not find differences between Internet users and non-users in their sample for participation in religious, leisure and community organisations, and also showed that in many cases use of the Internet augmented traditional social connectivity such as contacting family members. In addition, many of Katz and Aspden's (1997) sample developed friendships over the net and for the vast majority of users, time spent with family and friends did not change since they started using the

Internet. Kraut et al. (2002) also found positive effects of using the Internet on communication, social involvement and well-being in a longitudinal survey of 406 new computer and television users, and, in contrast to Kraut et al.'s (1998) finding, Franzen (2000) found that Internet use did not decrease respondent's network size nor time spent with friends, and that email did not have negative effects on people's social networks. Finally, in a review of the Internet literature, Livingstone (2002) argued that communication via this medium is a healthy way for young people to socialise. She claimed that research suggests that young people use online communication combined with offline forms in order to maintain usually local social networks and stated, 'for all but the already-isolated, the Internet supports rather than undermines existing social contacts' (p.13)

A wealth of other research, including papers by Moody (2001), Kraut (2002), Weiser (2001), Shaw and Gant (2002) and Wästlund, Norlander and Archer (2001) was also generated by Kraut et al.'s (1998) research. The picture that has emerged from research so far seems to be that both human beings and the Internet are too complex for anyone to be able to say that this technology has one effect on all those that use it. Therefore, research into the specific effects of the Internet on social wellbeing under different circumstances continues. Broadly speaking though, literature seems to indicate that the Internet is not, in itself, any great threat to human sociability, as might be expected.

However, what is of most relevance to this thesis was that reading these papers encouraged the idea of examining whether or not characteristics which are associated with socialising could be related to use of the Internet.

Shyness, in particular was chosen for research because of an article by Shepherd and Edelman (2001) in *The Psychologist*, which asked whether the online environment is beneficial for shy individuals to communicate, or whether it increases their isolation. Shepherd and Edelman's (2001) article was also responsible for a further decision to research social phobia, as, along with social anxiety, it questioned the effects of the Internet on this condition. (As will be explained in more detail later in this thesis, social phobia can be viewed as distinct from social anxiety, in that it is concerned with a fear of scrutiny, as opposed to social interaction).

There also seemed to be good theoretical reasons as to why those who used the Internet frequently might be more likely to be shyer than others. These theories are described later in this introduction. However, even at the early stage of development of the research idea, certain characteristics of the Internet that might encourage shy people to use it already seemed apparent. For example, the Internet is a technology which is usually used in isolation for many of its non-communication functions, which it was speculated could appeal to shy and socially phobic people. Furthermore, even where communication is concerned, the Internet allows one to avoid face-to-face contact with others. It occurred that this characteristic might appeal to shy people because it would allow them to socialise without perceiving physical cues, such as facial expression and tone of voice, which could encourage anxiety responses. It was also considered that the private nature of Internet communication might appeal to socially phobic people because it would allow them to socialise without being scrutinised.

Indeed, since the start of this research, a debate about how characteristics associated with socialising might relate to Internet use, that stemmed from the debate about how the Internet affects social wellbeing, has become prominent. For example, Kraut et al. (2002) argued for a 'rich-get-richer' theory in regard to Internet use which indicates that the Internet will tend to be used by extravert young people in order to add to already existing large groups of contacts. In support of this argument, Kraut et al. found generally significant main effects of Internet use on social involvement amongst 406 participants from Pittsburgh. However, it was also the case that whilst Internet use was associated positively with measures of social involvement and wellbeing for extraverts, it was negatively associated with these measures for introverts. By comparison, the 'social compensation' hypothesis suggested that the Internet would be used more by people who are lonely or socially anxious to talk to those with whom they are not well acquainted. For example, Gross, Juvonen and Gable (2002) carried out research using 130 seventh grade students from a public middle school in California and found that social anxiety was significantly positively correlated with the motive 'to avoid being alone' as a reason for instant messenger use. Furthermore, young people who reported fewer close friends were even more likely to report instant messenger use to avoid being alone. Similarly, McKenna et al. (2002) found that from a group of Internet newsgroup posters, those who could better express their true selves on the Internet rather than offline were more likely to have formed close online relationships.

It was also considered that shyness and social phobia might be related to communication using mobile phones because in some ways

communication via the Internet and mobile phones are similar. At the very least both allow people to avoid face-to-face interaction. However, with this in mind, one might question why mobile phone communication would appeal to shy and socially phobic people any more than landline phone communication. It was thought that this might be the case, first, because a common use of mobile phones, especially amongst young people, is text messaging. This does not tend to be a function of landline phones, and might be especially appealing to those who are shy because it reduces the 'socialness' (or 'social presence' – a term which will be discussed later in this thesis) of communication even more than a voice call would. This might appeal to shy individuals in particular. Furthermore, the fact that mobile phones can be much more convenient than landline phones, as they are carried on the person, may mean that socially anxious and socially phobic people would find them more useful than landline phones for everyday social interactions.

In addition, it was considered that one of the reasons that mobile phones had become so popular amongst young people could be related to the fact that adolescence is a time when some people are shy and find face-to-face socialising difficult. After all, one of the challenges of adolescence is to learn social roles and the difficulties of this challenge for young people, and especially adolescents, have received much attention in classical psychological theory (for example, Eriksson, 1968). As mobile phones are a technology that can mediate communication it was thought that they might help young people communicate and relate to other people, especially amongst those who are shy.

So, Chapter 4 discusses some of the statistical properties of Mattick and Clarke's (1998) Social Interaction Anxiety (SIAS) and Social Phobia (SPS) scales. These scales were used to measure social anxiety and social phobia for research reported in Chapter 5. Included in Chapter 4 is a confirmatory factor analysis (CFA) that was performed to confirm the factorial structure of the scales, as suggested by Mattick and Clarke. Chapter 5 is a correlational study investigating the relationship between social anxiety and social phobia and use of the Internet and mobile phones by young people.

The next chapter of the thesis, Chapter 6, is the most qualitatively in-depth. It uses Grounded Theory (a technique which will be explained in more detail in the relevant chapter) with data collected from focus groups to suggest issues other than social anxiety and social phobia that might be relevant to young people's use of the Internet and mobile phones. For the sake of clarity, a focus group can be defined as a form of qualitative research in which a group of people are asked about their attitudes towards a particular subject. Discussion occurs in an interactive group setting where participants are able to converse with other group members and the free-flow of ideas is encouraged. The focus group chapter of the thesis was included because it was felt that whilst relatively broad influences on young people's use of the Internet and mobile phones had been discussed in earlier chapters, more specific factors might not have received attention. Furthermore, it was considered that young people themselves should have the opportunity to describe issues that they felt were important to their own use of the Internet and mobile phones. It was also thought that focus group methodology might allow further understanding of more subtle relationships between social

anxiety and young people's use of the Internet and mobile phones to emerge. Ultimately, this certainly turned out to be the case, as is described in Chapter 6.

Finally, Chapter 7 concludes this thesis by discussing its achievements, as well as its limitations, and also some directions for future research. In addition, a discussion of whether social anxiety is best viewed as a relatively stable psychological characteristic, or as a transient state, is offered.

It is hoped that, in general, this thesis describes how young people use the Internet and mobile phones in their daily lives and indicates some characteristics of young Internet and mobile phone users, especially in terms of gender. More specifically, it is hoped that this thesis describes how shyness and social phobia are related to the use of the Internet and mobile phones for communication purposes. Finally, it is hoped that the thesis discusses what other issues associated with young people's Internet and mobile phone use might be important to them, especially in regard to communication.

## **Literature Review**

### **Why research young people's use of the Internet and mobile phones?**

Use of the Internet and mobile phones affects the ways that human beings think and act. For example, two of the main uses of the Internet and mobile phones are communication and information retrieval, which influence how we interact with one another and learn about the world. Given that Psychology can be defined as the scientific study of mind and behaviour, it can be seen that Psychology, as a discipline, should be interested in Internet and mobile

phone use because for it to ignore this subject would be to ignore fundamental aspects of its field of study.

Both the Internet and mobile phones also have an impact on how people communicate with one another, and this is a subject which will receive particular attention in this thesis. Rollo May, the American existential psychologist, described the importance of communication as follows:

'Communication leads to community, that is, to understanding, intimacy and mutual valuing.' This illustrates the significance that we, as human beings, place on communication. Therefore, given its importance, anything which has an impact on communication should be understood in order that people can interact with one another as productively as possible.

Another reason that the Internet in particular should be researched is because it can be seen that this is an important technology in terms of equity if one considers all of the information it can provide us with. Governmental functions are increasingly accessible, employment opportunities are advertised and business opportunities are available online. In addition, the Internet may provide commercial advantages to those that use it as it allows easy comparison of prices for various goods and services. In addition, the Internet can be employed for entertainment and educational activities. Thus it can be seen that it is a valuable technology, the use of which can enrich and improve lives. To a lesser degree, perhaps, the mobile phone can also provide information which is of benefit to its owner, for example via WAP (Web Access Protocol). This is another reason that the use of mobile phones by young people should be studied.

In general, young people as a group have been neglected in terms of research into their Internet use. Whilst data concerning Internet-related activities by adults in the UK have been collected (for example, by the Office for National Statistics, 2002), little non-commercial data concerning English children's use of the Internet has been gathered. For example, in the 'People' chapter (Chapter 4) of the Government's UK Online Annual Report (2002) which discusses the public's use of the Internet, adult use is focussed on to a much greater extent than that of children. Although it is stated that '99 percent of all schools now have access to the Internet, compared to 28 percent in 1998' (p.85), descriptions of actual Internet activity by children are not reported. The same is true of mobile phone use. There have been few surveys of young people's use of this technology conducted in the UK, although findings from one or two of the fairly brief surveys that do exist are discussed in the following section.

The author's own survey of Internet and mobile phone use that is reported in Chapter 2 hopes to improve the paucity of data concerning young people's use of these technologies. The survey method of collecting data was used because it was hoped to discover the characteristics, opinions and behaviours of young Internet and mobile phone users. Smith and Davis (2004) have argued that the survey method is the most appropriate research method to achieve such ends. In particular, surveys are an efficient way to collect information from a large number of respondents, especially as they are relatively easy to administer. In addition, surveys are also standardised which means that the data collected by them can be easily compared across

different groups. This was viewed as a particularly important characteristic for this part of the research as comparison between the genders was desired.

As few surveys of young people's Internet and mobile use have been carried out in England, this literature review will focus mainly on those from other countries. However, those few surveys that have been conducted with children in this country will also be discussed. It should be remembered that the functions of the Internet and mobile phones that are important to young people are constantly fluctuating. For example, since research for this thesis was started in 2001, chat rooms have become less popular with the young and instant messaging has taken on much greater significance, as will be discussed. However, in regard to mobile phones, text messaging seems to be more than just a passing fad and whether multi-media messaging (which enables one to send still images, sound and video content) will achieve equal significance amongst young people remains to be seen (Berg, Taylor and Harper, 2003). The changing importance of different functions of the Internet and mobile phones amongst young people means that there is a continual need for new and updated survey data if this group's use of these technologies is to be understood.

### **Past surveys of Internet Use**

The enormous number of people who use the Internet is indicated by Nua Internet surveys, which examined many published surveys and provided an educated guess that worldwide in September 2002 there were 605.6 million people online, with 190.91 million in Europe, 182.67 million in Canada and the U.S.A. and 187.24 in Asia and the Pacific. In fact, the Internet was the fastest

growing technology in history, according to the Harris Interactive Poll (1999). Between 1995 and 1999 the online population in the US went from 9 percent to 56 percent. Other figures which indicate the rapid proliferation of the Internet include those reported in September 2001 from the U.S. Census Bureau, who found that 51 percent of households had Internet access. This was an increase from 26 percent in 1998 and 18 percent in 1997.

The Internet is now also a part of daily life for many people in the UK: by September 2001, around 9.7 million, or 39 percent of households in the UK were able to access the Internet (Bowman, 2002). This figure was four times higher than it was less than three years previously. Furthermore, according to the April 2002 National Statistics Omnibus Survey, 56 percent of all adults in the UK had accessed the Internet at some time in their lives. Furthermore, in only the month prior to their survey 46 percent of the entire adult population had accessed the Internet.

As stated, there have been few detailed surveys of young people's Internet use in the UK. However, using a sample of 5900 young people, Powell (2001) found that in spring 2001, 75 percent of 11-19 year olds had accessed the Internet at some time in their lives. Furthermore, this study also described how six months later this figure had risen to 80 percent. These figures illustrate the recent rapid acceleration of Internet use by young people in the UK. This is further illustrated by a later survey into young people's Internet and mobile phone use conducted by Haste (2005) for Nestlé, which found that nearly nine out of ten young people aged 11 to 21 years from a representative sample of 1058 from the UK had access to the Internet on a personal computer.

Powell (2001) also found that whilst the number of children using the Internet was increasing, the types of things that they were using it for were constantly changing. For example, he stated that in early 2000, 41 percent of 12-17 year olds who accessed the web claimed to visit music and MP3 sites. However, in spring 2001 this fell to 34 percent, and, in November 2001 to 26 percent. Whether or not these fluctuations in Internet use by young people stabilise in the future is something that remains to be seen.

These findings also highlight that uses of the Internet for entertainment purposes may be popular amongst the young, and research from other countries has also shown that this is the case, as well as indicating that use of the Internet for commerce and communication is important to this group.

For example, Nachmias, Mioduser and Shemla (2000) looked at the purpose and pattern of Internet use by 384 junior-high and high school students in Israel aged twelve to eighteen years and found that about half (46.6 percent) of the sample used the Internet, often for entertainment and leisure purposes, such as games and hobby sites (28.3 percent visited game sites and 53.7 percent visited hobby sites frequently). They also found that the primary use of the Internet by children was for communication such as email and chat (52.6 percent of the sample used the Internet for these purposes frequently).

Similarly, Ebersole (2000) conducted a survey of 10-21 year old students in ten public schools in a western state in the US, and found that they visited commercial websites far more frequently than other types. Also, whilst students reported that they used the World Wide Web for 'research and learning' 52 percent of the time, a sample of sites they actually visited

revealed that only 27 percent were actually suitable for this purpose. The sites visited most frequently were commercial and these were rated as having the lowest educational value.

By contrast, a study by La Ferle, Edwards and Lee (2000) did find a high level of scholarly use of the Internet amongst 189 14 to 19 year olds in a south-western state high school in the US, but this may have been due to the atypical setting from which data were collected. This was a special 'prototype' school for new technology which had extensive computer facilities and programs. La Ferle et al.'s research found that the young people's primary use of the Internet was for research (82.4 percent), followed by homework (65.9 percent), finding out about news and current events (43 percent) and health education (33 percent).

### **Past surveys of mobile phone use**

Charlton, Panting and Hannan (2002) carried out a survey of 10 and 11 year olds in Gloucestershire and this revealed that nearly 45 percent of both boys and girls claimed to own mobile phones. In addition, an NOP survey (2001) stated that 48 percent of 7-16 year olds, and 77 percent of 14-16 year olds owned a mobile phone (sample details unavailable). However, a more recent Childwise Monitor Survey from winter 2003-2004 reported higher figures: this stated that 53 percent of children aged 5-16 had their own mobile phone and this figure rose to 84 percent for 11-16 year olds (sample details unavailable). Finally, Haste (2005) stated that 97 percent of females and 92 percent of males aged 11-21 had access to a mobile phone. Thus, access to mobile phones by the young may be approaching universality.

The Childwise Monitor Survey from Winter 2003-2004 also highlighted the popularity of text messaging amongst the young, with 91 percent of mobile phone owning children aged 5-16 stating that they communicated via this method. This is equivalent to 49 percent of all children. 61 percent of mobile phone users also stated that this was the main use of their phone, and this was the most for any function. The Childwise Monitor Survey also noted that from the age of 13 and over, text messaging is almost universal, with 97 percent of young mobile phone owners practicing it (83 percent of all young people). Similarly, Haste (2005) found that nine out of ten young mobile phone owners texted at least daily and that 54 percent did this more than five times a day.

Despite the pre-eminence of text-messaging, making and receiving calls were also found to be very popular in both the Childwise Monitor Winter 2003-2004 Survey and Haste's (2005) survey. The Childwise Monitor survey found that 90 percent of their mobile phone owning group (48 percent of all children) made calls and 83 percent (45 percent of all children) received them. However, only 18 percent of phone users stated that they mainly made calls. Haste (2005) found that three-quarters of young mobile phone owners indicated that they used voice calls to speak to their friends at least daily, and one in six indicated that they did this more than five times a day.

Finally, accessing the Internet or using WAP by mobile phone was found to be considerably less popular than other activities by the Childwise Monitor Survey: only one in eight young people indicated that they carried out this activity. Haste (2005) also indicated that use of the Internet via mobile phone was not very popular amongst young people. Haste stated that whilst

younger teenagers sometimes used their mobile phones for email and to access the Internet, post-16 year olds mainly used a computer rather than a mobile phone for this purpose. She also found that whilst 44 percent of Year 7-8 children (aged 11-12) used their mobile phones daily to surf the Internet, only 19 percent of those over the age of 16 did this.

Use of the Internet and mobile phones can contribute positively to many areas of young people's lives, in fields as diverse as entertainment, the provision of educational, political and health information and the facilitation of social, financial and commercial activities. Therefore, it is important to examine whether there are gender differences in the use of the Internet and mobile phones in order to judge if there is equality between the sexes in this regard. Issues associated with gender differences received special focus in the next two chapters. The following sections discuss other research that has investigated this topic.

### **Gender differences in young people's use of the Internet**

Findings from studies concerning gender differences in Internet use by young people are equivocal depending on the country or countries in which the research was carried out. Some studies indicate a bias towards male use of the Internet. For example, from a survey of 11 000 6-16 year olds in Europe, D'Haenens (2001) found that boys were more likely than girls to have their own Internet access, except in Spain where girls and boys were roughly equal. In particular, D'Haenens (2001) found that Israeli boys were especially likely to have their own access to the Internet: whilst fewer than 10 percent of European children or Israeli girls had access to a PC and modem in their

bedroom, a quarter of Israeli boys had it. Similarly, Nachmias et al. (2000) indicated a bias towards male use of the Internet amongst a sample of 384 junior-high and high school Israeli children, and Durnell and Haag (2002) found a bias towards male use of the Internet amongst 150 Romanian university students. Furthermore, Schumacher and Morahan-Martin (2001) made similar findings in a 1997 survey of 225 American undergraduate college students. This study indicated that males were more experienced and reported greater skill with the Internet than females.

However, other studies have not indicated such a bias towards male use of the Internet. Odell, Korgen, Schumacher & Delucchi (2000) found that there was virtually no gender gap in overall Internet use in a sample of 843 American undergraduates. Likewise, in a study of 630 Anglo American undergraduates, Jackson, Ervin, Gardner and Schmitt (2001) reported that men and women used the Internet equally (although women in this study did report more computer anxiety, less computer self-efficacy, and less favourable and less stereotypic computer attitudes). Importantly, a search of the psychological literature undertaken just before the survey reported in the following chapter was carried out did not reveal any research into the presence or otherwise of gender differences in Internet use amongst children in the UK.

The conflicting findings from international research and the lack of research focussed on children in the UK indicates the need to provide reliable data that can provide information about gender differences in Internet use amongst this group. Whilst findings concerning gender differences in overall Internet use by young people are somewhat equivocal, a number of studies

have replicated data that indicate there may be some consistent differences in the purposes for which males and females use the Internet, across different nations and age groups. For example, many studies have indicated that females may be more likely to use the Internet for email than males (Jackson et al., 2001; Odell et al., 2000; Pew Internet and American Life Project, 2000; Sherman et al., 2000; and Weiser, 2000). Haste (2005) also reported that over 80 percent of females in her survey stated that they had access to email, compared to just under 70 percent of males.

Boneva, Kraut and Frohlich (2001) suggested that women may have appropriated the use of the Internet for email because they have traditionally been responsible for maintaining relationships. Furthermore, both Boneva et al. (2001) and Weiser (2000) stated that email may suit the emotionally expressive style of communication that women tend to favour in maintaining relationships. Allen (1995) also discussed how women may like to use email as it allows them to communicate without the gender dynamics that influence other methods of communication.

Some studies have also indicated that females might be more likely to use the Internet for education and research than males (Weiser, 2000; Odell et al. 2000; Durndell and Haag, 2002), although Weiser (2000) suggested that this difference may only exist in younger age groups, reducing around the age of 30-40.

Studies have also found that males may be more likely than females to use the Internet for other purposes. For example, the majority of researchers have indicated that males are more likely to use the Internet to research purchases and/or to shop (Odell et al., 2000; LaFerle et al. 2000; Weiser,

2000) although exceptions to this are evident: Teo and Lim (2000) did not find that this was the case in a study of Internet use by undergraduates in Singapore. Other authors have indicated that males may be more likely to play or download games (Odell et al. 2000; La Ferle et al. 2000; Nachmias et al., 2000; Wesier et al., 2000), listen to or copy music (Odell et al., 2000) and use the Internet to find out about music (LaFerle et al., 2000).

### **Gender differences in young people's use of mobile phones**

Research related to gender differences in young people's use of mobile phones is sparse, but what there is has indicated that mobile phone use in general may be slightly biased towards girls. For example, the Childwise Monitor Survey for winter 2003-2004 stated that girls between the ages of 5 and 16 were more likely to own a phone than boys (girls: 56 percent, boys: 50 percent), and that phone ownership was also highest amongst girls aged 13 and over (92 percent). Unfortunately, comparative figures for the latter finding for boys of this age were not available. Furthermore, as has been stated, Haste (2005) found that amongst a sample of 11-21 year olds, 97 percent of females were mobile phone owners, compared with only 92 percent of males.

### **Communication by young people using the Internet and mobile phones**

Along with gender differences, communication via the Internet and mobile phones receives special focus in the following chapter. It was felt that communication by young people using these technologies was an area worthy of considerable attention, because communication can be viewed as extremely relevant to young people's lives. The psychological literature alone,

for example, has noted the impact of social groups on adolescents for delinquent behaviour (Hudson, 2004), drug taking (Chen, 2003), dating and sexual behaviour (Harper, Gannon, Watson, Catania and Dolcini, 2004) and conflict (McMullen, 2003), to name just a few examples. Obviously any social group depends on communication for its existence so the methods by which young people communicate with one another are an important field of study.

It can also be argued that the Internet and mobile phones have communication as a function in common above all others. Although information-seeking can be carried out using both mobile phones and the Internet, it would be less meaningful to compare them in this regard because, so far, attempts to promote the mobile phone as an information-seeking device have met with far less success than similar attempts with the Internet. For example, Odlyzko (2001) noted the popularity of text messaging compared to the relative failure of WAP technology. (However, it is acknowledged that it is quite possible that in the future mobile terminals will be used more frequently for information-seeking).

Communication can also be seen as a more significant function of the Internet than information-provision. For example, Odlyzko (2001) stated that whilst industry leaders often tend to assume that 'Content is king' (p.1) with regard to the Internet, it is actually connectivity that is more important for this technology since email is its most popular use. Likewise, Kraut, Mukhopadhyay, Szczypula, Kiesler & Scherlis (2000) stated that email best predicts whether new users will stay online. Similarly, Biocca (2000) claimed that social aspects of the Internet are what draw people to it, stating that 'Internet services that allow like-minded people to gather and inter-connect

are booming' (p.26), and Joinson (2003) described how some Internet search engines already focus more on social connectivity than content. He stated: 'Yahoo! Now provides email, chat rooms, e-groups, instant messaging and personal spaces, with web directories and directed access to content seemingly relegated to a more minor role' (p.188).

It is especially pertinent to this thesis that young people like to use the Internet to communicate more than any other form of communication technology. Pastore (2002) stated that according to AOL the Internet is the principal form of communication for teenagers, being more important to them than even the telephone.

Joinson (2003) also opined that it would be likely that the Internet will be used more and more for social purposes as time goes on, as occurred historically with the telephone. In illustrating this point, Joinson cited Fischer (1992) who described how social uses of the telephone were initially discouraged by industry executives until the 1920s. (Before this time the telephone was viewed as a tool whose proper use was for business purposes). In addition, Haste (2005) described how the telephone was initially the tool of businessmen but later became the foundation of upper class women's social lives. As Rollo May's quote (p.24) indicated, social relationships are extremely important to human beings and so it may indeed be the case that the communication functions of modern technology will come to be exploited above all others.

Given that studies have indicated the importance of both Internet and mobile phone-based communication for young people, the question arises: does the use of one of these forms of technology for communication purposes

negate the use of the other? For example, it might be the case that as mobile phones have now become popular some of the functions of the Internet have been replaced by this technology. One could certainly imagine, for example, the possibility that text messaging might have reduced the need for young people to send emails. If it were the case that mobile phones were fulfilling some of the functions of the Internet then one would expect to find negative correlations between measures of the use of these technologies.

However, one could equally conceive of a certain type of 'technologically competent' young person who would be likely to use both the Internet and mobile phones for different types of communication depending on the circumstances in which they wanted to communicate. There is evidence that people use different forms of communication technology for different purposes. For example, Smoreda and Thomas (2001) found that although the social networks people contact using a mobile phone tend to be similar to those contacted on a landline, they are smaller in terms of numbers of people contacted, and more orientated towards friends than family. Furthermore, Smoreda and Thomas found text-message based networks exaggerated this tendency still further and that email based networks were the smallest, in terms of numbers of people contacted, and widest, in terms of geographical distance of the people being communicated with. Smoreda and Thomas also found that there was a tendency for people to use mobile phones, text messaging and email side-by-side and, notably, that those under the age of 25 years of age did this the most heavily. If use of the Internet for communication purposes encourages the use of mobile phones (or vice-versa), then one would expect to find positive correlations between measures

of the use of these technologies. The relationship between use of the Internet and mobile phones by young people for communication purposes will be investigated in this thesis in the following chapter.

### **Social anxiety and social phobia and young people's use of the Internet and mobile phones**

As well as gender issues, another important element of this thesis is a consideration of how the psychological characteristics of social anxiety and social phobia might be associated with use of the Internet or mobile phones amongst young people. In fact, researchers have already investigated how a number of personality characteristics may be related to Internet use. It has been suggested that extraversion (Hamburger and Ben-Artzi, 2000; Amiel and Sargent, 2004), neuroticism (Swickert, Hittner, Harris and Herring, 2002; Hamburger and Ben-Artzi, 2000; Amiel and Sargent, 2004), psychoticism (Amiel and Sargent, 2004), locus of control (Flaherty, Pearce and Rubin, 1998) and self-esteem (Joinson, 2004) are all related to various aspects of Internet use. In addition, it has even been claimed that frequent Internet users tend to have deviant values, and also lack the emotional and social skills that are related to high Emotional Intelligence (Engelberg and Sjöberg, 2004). However, other literature has indicated that psychological characteristics are less important in determining Internet use. For example, Bonebrake (2002) did not find any significant differences in social skills, self-esteem, levels of anxiety and levels of excitement seeking between those who had and had not formed relationships online. In addition, Campbell, Cumming and Hughes (2006) did not find any evidence to suggest that time spent using the Internet

is related to neuroticism, extraversion or psychoticism. The psychological characteristics associated with mobile phone use have received little attention.

It was decided that the author's research would investigate whether the psychological characteristics social phobia and social anxiety (or shyness) might be important determinants of some aspects of the use of the Internet and mobile phones, in particular for communication purposes for reasons that will be discussed shortly. First, however, definitions of social anxiety and social phobia are necessary.

### **Definitions of social anxiety and social phobia**

Social anxiety (or shyness) and social phobia can be viewed as two distinct conditions and definitions of these can be found in a number of sources. Crozier (2001) provided a good description of both, stating first of shyness that:

'When people experience shyness they tend to refer to feeling self-conscious, to worrying about what other people present might think. They feel flustered and ill at ease, and perhaps blush. They remain quiet, stay in the background, avoid the limelight and possibly avoid or escape the situation altogether.' (p.31).

Most people will be able to relate to this definition of shyness, probably having experienced the condition at one time or another. In this regard, Heiser, Turner and Beidel (2003) stated that prevalence estimates for shyness

have ranged from 20 to 48 percent. However, social phobia is something with which many may be less familiar: Heiser et al stated that estimates of the 12-month prevalence rate for this condition have been between 3 percent and 8 percent. Crozier (2001) described social phobia in the following way:

'Social Phobia was described [in DSM-III (Diagnostic and Statistical Manual of Mental Disorders)] as a persistent fear of finding oneself in a situation where one is subject to scrutiny by others and that one's behaviour might lead to embarrassment or humiliation. This causes a significant amount of distress because the sufferers of such fears recognise that their fear is excessive.' (p.182).

Crozier (2001) also added that DSM-IV states that with social phobia fears may extend to more than one social or performance situation, and that the individual experiencing the condition could fear that embarrassment might arise from showing signs of anxiety, as well as from his or her actions. Heiser et al. (2003) also emphasised further characteristics peculiar to social phobia, stating that whilst social anxiety is usually transitory, social phobia often exists more chronically, and that social phobia might often cause more impairment to an individual's life than social anxiety.

Heiser et al. (2003) also highlighted that social anxiety and social phobia could be characterised differently by investigating some previous theories concerning these disorders: that shyness and social phobia are entirely different, that they are entirely identical, that social phobia is merely a more severe form of shyness, and finally that there is some overlap in

shyness and social phobia but that shyness is a much broader construct. Ultimately, it was the last of these positions that Heiser et al.'s research best supported. This was because although social phobia was more prevalent among shy people (18 percent) than non-shy (3 percent), most (82 percent) of the shy group that they investigated did not have social phobia. Also, of those who were diagnosed with social phobia, some (15 percent) were not shy.

### **Why is it important to study whether social anxiety and social phobia are related to Internet and mobile phone use?**

Understanding the relationship between social anxiety or social phobia and young people's use of the Internet and mobile phones could help those who experience these conditions. The reason for this is that if, for example, it were known that young people with social anxiety or social phobia tended to be heavy users of the Internet or mobile phones, then this knowledge could be publicized. This would help relevant carers recognise if a young person of their acquaintance might be suffering from social anxiety or social phobia, allowing them to intervene if appropriate. Of course, whether intervention is appropriate would depend on the severity of the condition, and whether it had a significant detrimental effect on the life of the person who experienced it. Intervention might not be necessary in the majority of cases, for example where an individual was just a little shy.

However, it might be important to offer instrumental and emotional support to young people who experience severe social anxiety or social phobia because these conditions can produce detrimental effects on their lives. For example, social anxiety can lead to social avoidance, withdrawal,

inhibition and even social phobia itself (Silverman and Kurtines, 1996). Social phobia can affect people's general health, and their levels of wellbeing associated with relationships with friends and partner (Mogotsi, Kaminer and Stein, 2000). Social phobia has also been associated with lower education levels, including premature withdrawal from school (Magee, Eaton, Wittchen, McGonagle and Kessler, 1996) and with negative financial outcomes, such as greater financial dependency (Schneier, Johnson, Hornig, Liebowitz and Weissman, 1992) and lower income (Magee et al., 1996).

In fact, research has shown that the occurrence of anxiety disorders in general during childhood and adolescence can cause social and academic difficulties, including underachievement at school (Berg, 1992; Last and Strauss, 1990; Kessler, Foster, Saunders & Stang, 1995). Anxiety disorders may also have a great economic cost to society because young people who fail to complete their education due to these can become unemployable in later life (DuPont et al, 1996).

It is also important to understand how social anxiety and social phobia relate to Internet and mobile phone use as a prerequisite for understanding whether the use of these technologies has a beneficial or detrimental effect on these conditions. It may be that the use of the Internet and mobile phones encourages users to avoid face-to-face contact which might reinforce their social anxiety disorder, or it may be that the use of communication technology gives those who experience social anxiety disorders the chance to improve their social skills in a non-threatening environment. This could lend them confidence and perhaps reduce the strength of their social anxiety disorder. Research reported later in this thesis suggests that use of the Internet and

mobile phones by young people for communication purposes tends to support rather than undermine face-to-face socialising. This topic will be discussed in more detail, but this may suggest that Internet and mobile phone communication are not detrimental to young people's offline social skills in general.

### **Social anxiety and general use of the Internet**

No research concerning socially phobic individuals' levels of use of the Internet has been conducted, but research has examined whether personality characteristics associated with social anxiety are related to its use. However, these studies do not present an entirely straightforward basis for hypothesis.

Some studies suggest that shyness might be associated with increased Internet use and some that it might not. For example, the former position is supported by Mazalin and Moore (2004). Using a sample of older teenagers and young adults from Australia, aged 18 to 25, these researchers found that high Internet-using males were less mature in their identity statuses and more socially anxious than either boys who used the Internet to a lesser degree or girls of a similar age. However, studies that suggest that shyness might not be related, or might even be negatively related to Internet use have also been conducted. For example, amongst a sample of low-income African American and European American adults, Jackson et al. (2003) found that extraverts used the Internet more than introverts (although this relationship disappeared after the first three months of home Internet use). In addition, Modayil, Thompson, Varnhagen and Wilson (2003) found that on some measures of social engagement, Internet users scored more highly than a comparison

group of household residents from Edmonton, Canada. These included club membership (although participation was lower) and a higher rate of helping others. However, a higher level of social isolation was also found amongst Internet users in this study which reduces the impact of the findings somewhat. In addition, Harman, Hansen, Cochran and Lindsey (2005) did not find differences in social anxiety levels between groups of 11-16 year old schoolchildren reporting higher and lower amounts of Internet use from schools in southern communities in the US. Finally, Gross et al. (2002) did not find that time spent on-line either overall, or for specific activities, was correlated with social anxiety amongst a sample of seventh grade students from a public middle school in Southern California.

Loneliness and social anxiety can be conceptualised similarly. For example, Jones et al. (1990) stated that 'both constructs generally emphasise emotional distress resulting from subjective evaluations in socially relevant situations' (p.259). In addition, as with shyness, loneliness suggests unsatisfactory personal relationships and like shyness, has been related to fewer friends, lower dating frequencies, and less satisfaction with relationships (Jones and Carpenter, 1986; Jones and Russell, 1982; cited in Jones et al., 1990). Jones et al. (1990) also stated that loneliness has been shown to be reliably associated with shyness, with researchers achieving correlations of between .40 and .51 between these conditions. (It is worth noting that these correlations are not large enough to imply, however, that loneliness is the same construct as social anxiety. It is also worth noting that Jones et al. stated that there is evidence from longitudinal studies which indicates that

shyness precedes and predicts loneliness more than vice-versa, which also implies it is a separate construct).

Research concerning associations between loneliness and Internet use can also be used to make a hypothesis about whether or not social anxiety might be related to use of the Internet. This has produced evidence that those who use the Internet more are often lonelier than those who use it less. For example, Engelberg and Sjöberg (2004) found that use of the Internet was related to loneliness amongst students from the Stockholm School of Economics and Morahan-Martin and Schumacher (2003) made the same finding amongst American undergraduates. Prezza, Pacilli and Dinelli (2004) also found that loneliness was positively correlated with Internet use amongst a sample of Italian secondary school children. Furthermore, Morahan-Martin and Schumacher (2000) found that pathological undergraduate Internet users were lonelier than other undergraduate Internet users. In addition, in an Australian study of young people aged between 15 and 21, Donchi and Moore (2004) found that boys who had many online friendships were likely to be lonelier than their peers (although for girls the opposite was true). These studies suggest that social anxiety might be positively correlated with Internet use.

In general, the findings from studies that relate to social anxiety and overall use of the Internet are not entirely harmonious. However, it is the opinion of the author that the preponderance of them suggest that those who are greater users of the Internet would be more likely to be shy. This leads to the first hypothesis of this thesis:

*Participants with social anxiety will use the Internet more than those without this condition.*

As well as being suggested by some previous research, this hypothesis also seems sensible for a number of theoretical reasons. First, those who are socially anxious might use the Internet more than those who are not because Internet use can be a solitary activity. Secondly, the Internet might be used more for social interaction by those who are shy which would contribute to levels of their overall use of the Internet being greater. Reasons that the Internet may be used more by shy people for communication will be discussed in some detail shortly as this is also a subject which will be investigated specifically by this thesis.

### **Social phobia and general use of the Internet**

There is no previous research concerning the relationship between social phobia and use of the Internet. However, the hypothesis for this part of the study is:

*Participants with symptoms of social phobia will use the Internet to communicate more than those without these symptoms.*

The reason for this hypothesis is, first, that Internet use is a solitary activity and so might appeal to people with symptoms of social phobia who may not like sociable activities because of a fear of scrutiny. Secondly, socially phobic individuals might socialise more on the Internet than other

individuals in order to fulfil a shortfall in offline socialising. This would add to their overall levels of Internet use.

### **Social anxiety and use of the Internet for communication purposes**

As well as investigating socially anxious and phobic people's overall levels of use of the Internet, this thesis will investigate whether there are correlations between measures of social anxiety and social phobia and use of the Internet for communication purposes specifically. Again, as with general Internet use, there is little research available that concerns the relationship between use of the Internet for communication and social phobia, but some research which is relevant to socially anxious people's use of the Internet for communication purposes has been conducted. However, like the research relating to overall levels of Internet use, this has not produced entirely straightforward results.

Studies by Strizke, Nguyen and Durkin (2004), Ward and Tracey (2004), Roberts, Smith and Pollock (2000) and Campbell et al. (2006) suggest that shy people might experience less anxiety when communicating online. Strizke et al. (2004) found that amongst a sample of Australian University students, individuals classed as shy or non-shy offline were also significantly different on offline measures of rejection sensitivity, initiating relationships and self-disclosure. However, they were not significantly different in regard to these three measures when online. In addition, the difference between shy and non-shy participants in levels of shyness was seven times higher in an offline than in an online context. Ward and Tracey (2004) found that for every aspect of relationship involvement measured in their study, including social support, satisfaction, number of friends and interpersonal competence,

shyness was associated with greater difficulties offline than on. However, it may still be the case that online communication presents a small degree of difficulty for some socially anxious individuals because shyness was associated with greater inhibition in online relationships in their study, just to much less of a degree than in face-to-face relationships. In a 6-month longitudinal study, Roberts et al. (2000) followed a group of 70 new Internet users, recruited through Internet advertisements, comparing those who were 'high shy' with those who were 'low shy'. One finding from this study was that the shy group experienced lower levels of shyness on-line than off-line. (Other findings from this study are discussed in the concluding chapter of this thesis).

Despite the fact that the studies reported so far suggest that shy people might find communicating online easier than offline, it is difficult to determine whether this would make shy people use the Internet to communicate more than others or not. Different studies have variously suggested that those who are socially anxious would use the Internet to communicate more than others, less than others or that shyness would not make any difference to levels of online communication. Examples of the former include studies by Hamburger and Ben-Artzi (2003), Papacharissi and Rubin (2000), Morahan-Martin and Schumacher (2003), Ward and Tracey (2004), Valkenburg, Schouten and Peter (2005), Yuen and Lavin (2004) and Nishimura (2003). Hamburger and Ben-Artzi (2003) found that loneliness was positively correlated with use of the Internet for social services amongst Internet users aged 16-58 years old from a college and a university in Israel. Papacharissi and Rubin (2000) found that the Internet was often used as an alternative means of interaction by those who were anxious about face-to-face

communication using a sample of students from a Midwestern university in the US. Morahan-Martin and Schumacher (2003) (sample details described previously) found that lonely people used email more than others. Using a sample of nine to eighteen year olds, from three elementary and three middle and high schools in the Netherlands, Valkenburg et al. (2005) found that some adolescents manipulated their identity when using instant messaging in order to compensate socially for shyness. Yuen and Lavin (2004) found that Internet-dependent individuals were shyer in face-to-face interactions relative to interactions online using students from a small private university in Western New York. Finally, Nishimura (2003) found that people who had a high level of trait social anxiety, in particular those under the age of 20, were highly motivated to use the Internet to form personal relationships. (Unfortunately, sample details were not available for this last study as it was written in Japanese and so only the abstract was available to the author, who is not a Japanese speaker).

However, examples of studies which suggest that shyness is not related to use of the Internet for communication include those by Peris et al (2002), Scealy et al. (2002) and Bonebrake (2002). Peris et al. (2002) found that shyness was not a feature of a sample of online chat users amongst a sample of 66 men and women between the ages of 21 and 40 years old. Scealy et al. (2002) made the same finding, as well as that email was also not related to this condition amongst a sample recruited from Monash University and the general public in Australia. Finally, Bonebrake (2002) did not find any significant difference in loneliness between those who had and had not

formed relationships online, amongst 104 undergraduate students from Elon University in the US.

A study which suggested that shy individuals might use the Internet for communication less than non-shy individuals was conducted by Campbell et al. (2006). This reported that chat users had lower levels of social fearfulness than non-users amongst a sample of self-selected online participants, aged 14-58 years. Similarly, Chak and Leung (2004) suggested that shy males might use the Internet for communication less than non-shy people. A sample of on- and offline participants was used for this experiment, with offline participants coming from three secondary schools in China. 78 percent of the sample was aged between 12 and 26 years old. Chak and Leung found that shyness significantly negatively predicted use of email, ICQ (an online community), and chat rooms amongst males.

Despite inconsistent previous research, this paper will test the following hypothesis:

*Participants with social anxiety will use the Internet to communicate more than those without this condition.*

The reason for this hypothesis is that, as discussed, background data suggests that shy people often find communication mediated by the Internet less anxiety provoking than offline communication. Furthermore, this phenomenon might be explained by a number of theories relating to computer-mediated communication (CMC) which also adds weight to the findings. For example, social presence theory, as developed by Short,

Williams and Christie (1976) is classed as a 'cues-filtered out' model of CMC and argues that communication media differ in respect of their ability to convey both verbal and non-verbal cues in a communicative exchange. This influences perceptions of the closeness or presence of the individuals engaging in a conversation. If verbal and non-verbal cues can be communicated easily then social presence is said to be high, but if they cannot it is said to be low. As one often expresses oneself using text on the Internet, it is a medium via which it can be very difficult to communicate verbal and non-verbal cues. Therefore, the social presence of the person being communicated with is low and so Internet-mediated communication may be less anxiety provoking than face-to-face communication for shy individuals.

Also in relation to cues filtered-out models of CMC, McKenna et al. (2002) made the point that the Internet can filter out the signs of visible social anxiety which can stigmatise shy people and hinder relationship formation. This could be another reason why Internet communication may be easier than offline communication for those who are shy.

Intimacy-equilibrium theory, as described by Argyle and Dean (1965) may also help to explain why Internet communication might be easier than offline communication for many shy people, and this relates to social presence theory, as will be seen momentarily. Intimacy-equilibrium theory states that people have an optimum comfort level for intimacy during an interaction, and that an increase in one form of intimacy should result in a corresponding decrease in another in order for equilibrium to be reached. For example, people often look away when they say something personal in a conversation. As social presence, and hence intimacy, is reduced when using

the Internet to communicate, according to intimacy-equilibrium theory, people will be more comfortable discussing personal information via this medium. Shy people, who may get especially uncomfortable during social interactions, may thus especially like to discuss personal issues via the Internet because intimacy levels are lower.

Another cues-filtered out approach to the psychology of Internet behaviour is the Reduced Social Cues (RSC) model (Kiesler et al., 1984). This may also indicate why shyness might not be a barrier to the use of the Internet for communication purposes. RSC models suggest that the limited bandwidth available for communication using computers means that there is a reduction in social cues during an interaction. Therefore, attention shifts towards the communication task itself rather than the person being interacted with, which can result in uninhibited behaviour and de-socialised communication (Kiesler, Siegal & McGuire, 1984). A lack of focus on social cues in computer-mediated communication, and in particular a lack of focus on social status might be appealing to shy people who may feel especially intimidated by others that they perceive as being socially superior to themselves.

Another theory that may help to explain why shyness might not be a barrier to Internet communication is Leary's (1986) self-presentational theory of social anxiety, as described by Roberts et al. (2000), who state: '...where situational factors are likely to interfere with the communication process, the individual reduces his or her self-presentation concerns as any social interaction difficulties may be attributed to the interfering factor' (p.123). The Internet is a medium in which situational factors, such as the ability to express

oneself using type, are very likely to interfere with the communication process. Therefore, self-presentational concerns may be reduced when communicating with the Internet as compared to face-to-face. This may encourage shy people, who may be particularly concerned with how they present themselves, to employ this mode of communication.

Amongst others, McKenna and Bargh (2000) have also argued that socially anxious individuals might feel more comfortable using the Internet for communication than other means because it provides anonymity which, as Joinson (1998), McKenna and Bargh (2000) and Spears, Lea and Postmes (2000) have discussed, can reduce accountability concerns and cause enhanced social disinhibition. Furthermore, anonymity is related to the concept of deindividuation, which could suggest that shyness might not be a barrier to chat room communication. Deindividuation has been described by Kiesler et al. (1984) and Joinson (1998), amongst others, the latter who stated that it can be traced back to Gustav Le Bon in 1895. Deindividuation theory states that when certain conditions such as anonymity, altered responsibility, sensory input overload and a novel, or unstructured environment exist, self-awareness is reduced and people become immersed in a group, leading to uninhibited behaviour. It can be seen that chat rooms incorporate some of these conditions and therefore uninhibited behaviour may be encouraged by them, which might appeal particularly to shy people.

### **Social phobia and use of the Internet for communication purposes**

This thesis will also investigate whether there are correlations between levels of social phobia and use of the Internet for communication purposes. There

has been a lack of research concerning use of the Internet for communication purposes by socially phobic people, although Shepherd and Edelman (2001) have discussed the possibility that online interaction might be less anxiety-provoking for socially phobic individuals than interaction in the 'real world'. This could be because if being scrutinised is at the heart of socially phobic people's anxieties, then online communication could allow them to socialise without the presence of this threat.

Bishop (2003) has also discussed how people with social impairments such as social phobia may find it difficult to recognise, interpret and respond to facial expressions, bodily gestures and tone of voice in face-to-face interaction. This may be due to a lack of practice where social phobia is concerned as those with this condition may spend a great deal of time avoiding social situations. As an understanding of non-verbal communication is necessary in understanding human emotion, those with social impairments may often feel awkward when communicating face-to-face. Therefore, it may be possible that they would turn to the Internet to socialise, as here interaction does not rely so heavily on an understanding of non-verbal communication. For these reasons, the following hypothesis will be investigated in this thesis:

*Participants with symptoms of social phobia will use the Internet to communicate more than those without these symptoms.*

### **Social anxiety and mobile phone use**

In general there is little in the psychological literature that relates to the presence of social anxiety amongst mobile phone users. However, a survey

conducted by Nokia in 2003 (cited in Srivastava, 2005) suggested that 78 percent of people stated that they had avoided a social situation by sending a mobile phone text message rather than calling. This implies that the use of text messages rather than other communication media can make some types of social interaction less anxiety-provoking. This aspect of text messaging could appeal especially to shy people, and make them more likely to be mobile phone users. In further support of this point, Fortunati and Magnanelli (2002) also argued that the use of text messaging by young people means that 'The difficulties in a first approach somehow disappear, [enabling] ... them to keep a certain physical distance, even in confidence and in private, etc.' (p.74). As well as text messaging appealing to shy people, mobile phone voice calls might also appeal to shy people because they also reduce the 'social presence' of an interaction, as compared with face-to-face.

Nevertheless, Prezza et al. (2004) found that mobile phone use was not related to loneliness amongst Italian secondary school students, which might suggest that this technology would not necessarily appeal to shy people. In addition, it is also considered that shy people might have fewer social contacts than non-shy people and that this might outweigh any increase in their use of mobile phones due to reductions in anxiety as compared to face-to-face interaction. Therefore, the hypothesis for this part of the study is:

*Participants with social anxiety will use mobile phones to communicate less than those without this condition.*

## **Social phobia and mobile phone use**

Again, no evidence that was relevant to socially phobic individuals' use of mobile phones for communication purposes was found, but it was considered that the following hypothesis might be true:

*Participants with symptoms of social phobia will use mobile phones to communicate less than those without these symptoms.*

This hypothesis was considered likely because although the use of mobile phones to communicate would allow socially phobic people to socialise without the threat of scrutiny which they fear, it is also likely that socially phobic people would have fewer social contacts than non-socially phobic people. It is considered that this latter factor would outweigh the former in determining amount of mobile phone use.

## **Conclusion**

Use of the Internet and mobile phones is interesting from a psychological point of view because these technologies are used by massive proportions of the population, and influence the ways that people think and act. Descriptions of Internet and mobile phone use by young people in the UK are scarce and, in particular, there has been little examination of gender differences in regard to the use of these technologies. Furthermore, research relating to gender differences in general Internet use from other countries is conflicting.

However, international research has fairly consistently indicated that females

may be more likely to use the Internet for email and educational purposes than males, and that males may be more likely to use the Internet to play/download games, shop, or copy/play music. In addition, some studies have indicated that girls in the UK may be more likely to be mobile phone owners than boys. The research reported in Chapters 2 and 3 attempts to increase the amount of data related to UK young people's Internet and mobile phone use, and specifically to explore gender differences in the use of these technologies.

Chapters 4 and 5 of this thesis will investigate whether the psychological conditions social anxiety and social phobia are related to young people's use of the Internet and mobile phones. Past research relating to this issue is somewhat limited and that which exists tends to be conflicting in its findings. However, from examination of this research, and from consideration of theories relating to the psychology of mediated communication, the following hypotheses have been determined:

- *Participants with social anxiety will use the Internet more than those without this condition.*
- *Participants with symptoms of social phobia will use the Internet more than those without these symptoms.*
- *Participants with social anxiety will use the Internet to communicate more than those without this condition.*
- *Participants with symptoms of social phobia will use the Internet to communicate more than those without these symptoms.*

- *Participants with social anxiety will use mobile phones to communicate less than those without this condition.*
- *Participants' with symptoms of social phobia will use mobile phones to communicate less than those without these symptoms.*

Finally, Chapter 6 of this thesis will examine whether or not more subtle aspects of social anxiety are related to young people's use of the Internet and mobile phones, using focus group methodology. This technique will also be employed to investigate whether issues outside of social anxiety are related to this topic.

## **Chapter 2**

### **A paper survey of secondary school children's Internet and mobile phone use**

#### **Method**

##### **Design and Measure**

This was a cross-sectional survey. That is, the sample of respondents was approached only once (Fife-Schaw, 2000). A questionnaire was created which examined aspects of Internet and mobile phone use. This can be found in Appendix I. Many of the dimensions that measured Internet use were the same as those found in surveys of adult use of this technology on the Office for National Statistics web-page ([www.statistics.gov.uk](http://www.statistics.gov.uk)), the UK's official statistics site. The Internet surveys conducted by the Office for National Statistics are 'developed in consultation with international organisations' and are also informed by 'other National Statistics Institutes including Canada and Australia' (Bowman, 2002, p.2). Examples of other questionnaires that focussed on Internet use were also discovered on the Internet which informed the creation of that used in this study. Questions concerning mobile phone use were then developed by the researcher and added.

Once a draft of the questionnaire had been completed, it was circulated amongst local members of the ESRC (Economic and Social Research Council) Virtual Society Program for their suggestions. These were then incorporated into the design. The resulting questionnaire asked respondents for a small amount of demographic information, and contained 17 questions

about Internet use and 5 questions about mobile phone use. These questions had 'tick-box' responses, although space was also included for participants to write answers not found on the tick-box list.

The questionnaire addressed a number of issues about children's Internet and mobile phone use. As well as asking whether or not children used the Internet, the questionnaire asked relevant participants why they did not use the Internet, as the reasons for this relate to encouraging them to engage in the beneficial aspects of this activity in the future. It was also felt necessary to examine how children used the Internet, as well as whether they had a good level of understanding of it and used it pragmatically and effectively. A number of questions relating to these factors were incorporated into the questionnaire. These regarded the amount of time children spent using the Internet, length of individual Internet sessions, how often children felt confusion when trying to use the Internet to find information, problems associated with the Internet, the importance of the Internet to children's lives, the level of satisfaction they felt with it, and whether they were able to find good or helpful websites.

Children were also questioned about the locations at which they accessed the Internet because if, for example, it was found that children were unaware that the Internet was available at certain places then it could be argued that government and other organisations might more effectively disseminate information about this.

In addition, the purpose of Internet use by schoolchildren was investigated as this would indicate whether they utilised this technology as a powerful tool in many aspects of their lives, or whether their use of it was

restricted to a minimum of functions. A number of questions on the survey related to this, the most obvious being one which asked for what purposes children used the Internet. However, other questions were also relevant, including one which examined the frequency of use of the Internet for email and the World Wide Web, and another two questions which asked children whether they had a personal email address and/or web-page.

Finally, a question about where children found out about new websites and web pages was included. This would indicate whether children used a number of sources to obtain information on the Internet effectively.

Questions related to mobile phone use were intended to provide a broad picture of young people's mobile phone usage. These concerned ownership of a mobile phone, reasons for non-ownership of a phone, length of time for which a phone had been owned, purposes of mobile phone use and frequency of use of a mobile phone for making calls, text messaging and accessing the Internet.

The questionnaire was tested for its reading ease using the Flesch-Kincaid Grade score, which rates text on a U.S. school grade level. The result is based on average sentence length and average number of syllables per word. The questionnaire achieved a Grade Level of 3.9, which would indicate that in regard to these factors, the questionnaire could be understood by someone aged 9 to 10.

### **Sample information**

1340 students from secondary schools in Teesside, an area in the North-East of England, were surveyed between February and May 2002. This was an

opportunity sample. It was practical to ask schools in the vicinity of the University of Durham, Queen's Campus, Stockton-on-Tees to take part in the survey as this facilitated distribution and collection of questionnaires by the principal researcher. All the local secondary schools were contacted to see if they wanted to participate in the survey and the four selected were those that agreed to take part. The four schools were based in four different wards of Stockton-on-Tees, which is located in Teesside. (The term 'ward' describes the electoral divisions within a local authority).

Table 1 gives information about these schools. According to the National Statistics 'Neighbourhood Statistics' website (2002), Stockton-on-Tees is the 75th most deprived district in the UK out of 354 districts (where 1 is the most deprived and 354 the least). The Family Expenditure Survey (Expenditure and Food Survey from 01/04/01) (cited by Bowman, 2002, p.3) stated that 26 percent of households in the North-East had access to the Internet, compared to a national UK average of nearly 40 percent, between October 2000 and September 2001.

School	Name of Ward in which school was located	Type of school (age of pupils in years)	Position of ward on Indices of Deprivation (2000) <sup>a</sup>	Mean GCSE point score for school in year 2000 <sup>b</sup>	Percentage of sample which came from school (n)
School A	Wolviston	Mixed comprehensive (11-16)	6723	40.5	64.1 (n=859)
School B	Fairfield	Mixed comprehensive (11-16)	4403	40.2	28.8 (n=386)
School C	Marsh House	Mixed comprehensive (11-16)	2965	35.2	3.7 (n=49)
School D	Yarm	Mixed comprehensive (11-18)	6896	51.0	3.4 (n=46)

Table 1: Information about schools used in Internet and mobile phone use survey

<sup>a</sup> This is from a total of 8414 English wards where 1 is the most deprived and 8414 is the least.

<sup>b</sup> The points system is calculated by the following number of points being given for each grade received in a GCSE exam: A\*=8, A=7, B=6, C=5, D=4, E=3, F=2, G=1. The national average GCSE point score for 15 year old children in England in the year 2000 was 40.6 (Department for Education and Skills, 2000).

50.5 percent of the participants (n=677) were male and 49.1 percent (n=658) were female (the remaining participants did not report their gender). Students were aged between 11 and 16 years old. The mean age of males was 13.2 years and the mean age of females was also 13.2 years.

The participants from the schools used in the survey can be considered reasonably representative of UK secondary school students in many respects. For example, none of the schools were located in areas of extreme

deprivation or extreme affluence and the mean GCSE point score for all the schools was quite close to the national average. Also, in terms of ethnicity the sample could be considered fairly representative of the rest of the UK, with the possible exception that people of Asian origin were under-represented. To illustrate, the National Statistics Web-site estimated that in April 2001, 92.1 percent of the UK population could be described as 'White' compared with 91.6 percent in this sample, 2.0 percent could be described as 'Black Caribbean/Black African' or 'Black Other' compared with 1.0 percent described as 'African/Afro-Caribbean' in this sample, 4.0 percent could be described as 'Indian, Pakistani, Bangladeshi' or 'Other Asian' compared with 0.3 percent described as 'Asian' in this sample, and 0.4 percent were described as 'Chinese' compared with 0.3 percent described as 'Oriental' in this sample. Finally, 0.1 percent of participants from this sample could be described as 'Arabic' but there is no comparative figure from the Office for National Statistics for this group. The remainder of the participants used in this survey (6.7 percent) did not state their ethnic background.

## **Procedure**

Participation in the survey was voluntary. In two cases (Schools A and B), questionnaires were delivered to the school for teachers to administer and collect. In the other two cases (Schools C and D) the author administered and collected the questionnaires. The first batch of questionnaires was administered to School D, which contributed the smallest number of respondents. This was so that if there were any problems with the questionnaire, such as children misunderstanding the wording of questions,

these could be rectified before the remaining questionnaires were distributed to the other schools. It turned out that the respondents from School D did not have any problems with answering the questions and so these results were included in the study, whilst the remaining questionnaires were unaltered and distributed amongst respondents from the other schools.

## **Results**

In this section, a general description of the results from the Internet and mobile phone parts of the survey are given, including gender differences. This is followed by a description of how the results from the questions concerning communication aspects of these technologies are related.

The questions asked to the participants are in bold type throughout this section. Significant (two-tailed  $p < .05$ ) gender differences in the data are indicated in Figures 1, 4, 5, 6, 9, 12 and 14 with an asterisk by the relevant x-axis label. Internet related questions are considered first, followed by mobile-phone related questions. It is acknowledged that multiple comparisons have been made with this data. This, arguably unfairly, increases the chances of obtaining significant results. Therefore, wherever multiple comparisons have been made and significant differences achieved, these should be taken as merely indicative of possible patterns within the data, rather than strong evidence that differences definitely exist.

## **Internet-related questions**

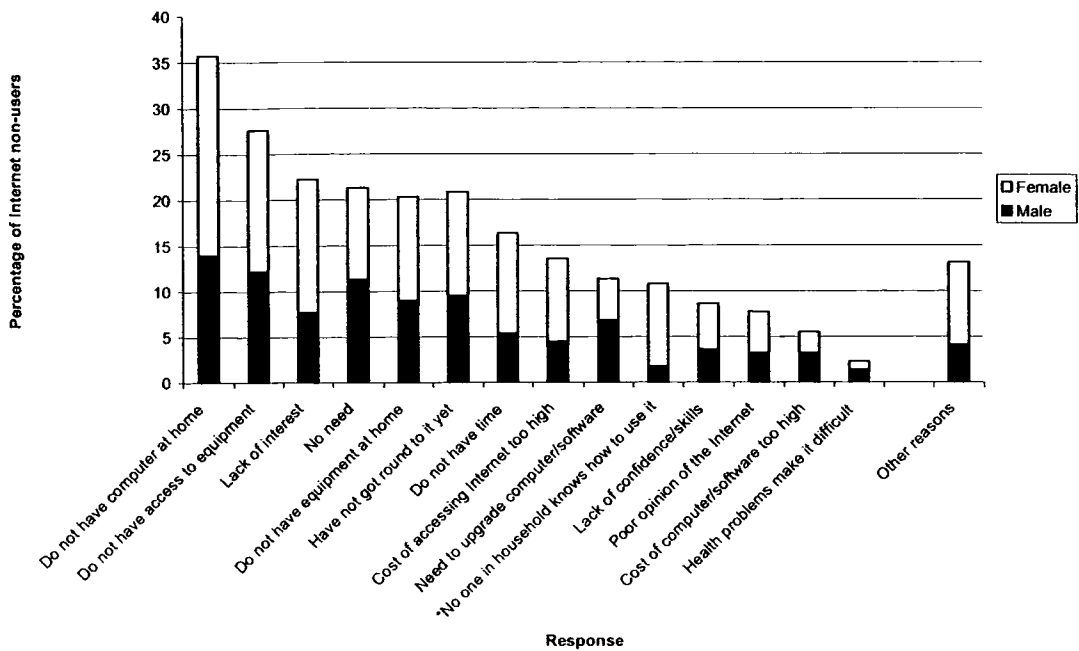
### **Do you use the Internet?**

The first question asked participants whether or not they used the Internet. Of the participants that answered this question (99.3 percent of the sample), 83.0 percent stated that they did. With regard to gender differences in the responses given, it was found that 85.7 percent of males stated that they used the Internet as opposed to 80.2 percent of females. This difference was significant ( $\chi^2=7.091$ ,  $df=1$ ,  $p<.01$ ).

### **What are your reasons for not using the Internet?**

The remainder of the Internet part of the survey was answered by participants who claimed that they did use the Internet, apart from this question which asked participants who did not use the Internet why this was the case. Figure 1 shows the responses that children gave to this question. More than one answer could be selected.

Figure 1: What are your reasons for not using the Internet?



As can be seen from Figure 1, some of the most common reasons given by children for not using the Internet were associated with a lack of access to facilities, for example: 'do not have computer at home' (35.7 percent), 'do not have access to equipment' (27.6 percent) and 'do not have equipment at home' (20.3 percent) (although 'need to upgrade computer/software' comes somewhat further down the list with only 11.3 percent of respondents giving this reply).

Another important factor amongst non-users seemed to be a basic lack of interest or motivation: fairly prominent in the list of reasons for not using the Internet were such responses as 'lack of interest' (22.2 percent), 'no need' (21.3 percent), 'have not got round to it yet' (20.8 percent) and 'do not have time' (16.3 percent).

Cost considerations came lower down for most of the sample with the reasons 'cost of accessing the Internet too high' (13.5 percent) and 'cost of computer/software too high' (7.7 percent) both being of less importance.

Lack of knowledge about how to use the Internet did not seem to be a concern for most children. The reasons 'no one in household knows how to use it' (10.8 percent) and 'lack of confidence/skills' (8.6 percent) were only given by a few participants. Also, only a small percentage did not use the Internet because they had a poor opinion of it (7.7 percent). Finally, 'health problems make it difficult' was a reason given by only a very minor proportion (2.3 percent) of the participants.

There was only one significant gender difference in relation to reasons for not using the Internet: girls were more likely to give the reason: 'no one in household knows how to use it' than boys ( $\chi^2=8.103$ ,  $df=1$ ,  $p<.005$ ). There were no significant gender differences for the remaining reasons for not using the Internet, including: 'lack of interest', 'no need', 'no computer at home', 'lack of confidence/skills', 'no access to equipment', 'cost of accessing Internet too high', 'cost of computer/software too high', 'do not have equipment at home', 'do not have time', 'poor opinion of the Internet', 'need to upgrade computer/software', 'have not got round to it', 'health problems make it difficult' and 'other reasons'.

### **Do you have a computer at home?**

95.0 percent of Internet users stated that they had a computer at home. There was no significant difference between males and females in regard to this.

Only 75 percent of Internet non-users stated that they had a computer at

home, and there was a significant association between whether or not participants stated that they used the Internet and whether or not they had a computer at home ( $\chi^2=12.74$ ,  $df=1$ ,  $p<.01$ ). This supports the idea that a lack of access to facilities may be an important reason for non-use of the Internet amongst young people.

### **How often do you use the Internet for email? How often do you use the Internet for the World Wide Web?**

Figure 2a and 2b show that the modal category for Internet users' use of the Internet for email and the World Wide Web was 'a few times a week', although a considerable proportion of respondents used the Internet more or less often for these purposes as well. Overall, there was not a significant difference between the genders in the frequency with which they stated they used the Internet for email. However, males stated that they used the Internet more frequently for the world-wide-web than females ( $U=110386$ ,  $p<0.0005$ ).

Figure 2a: How often do you use the Internet for email?

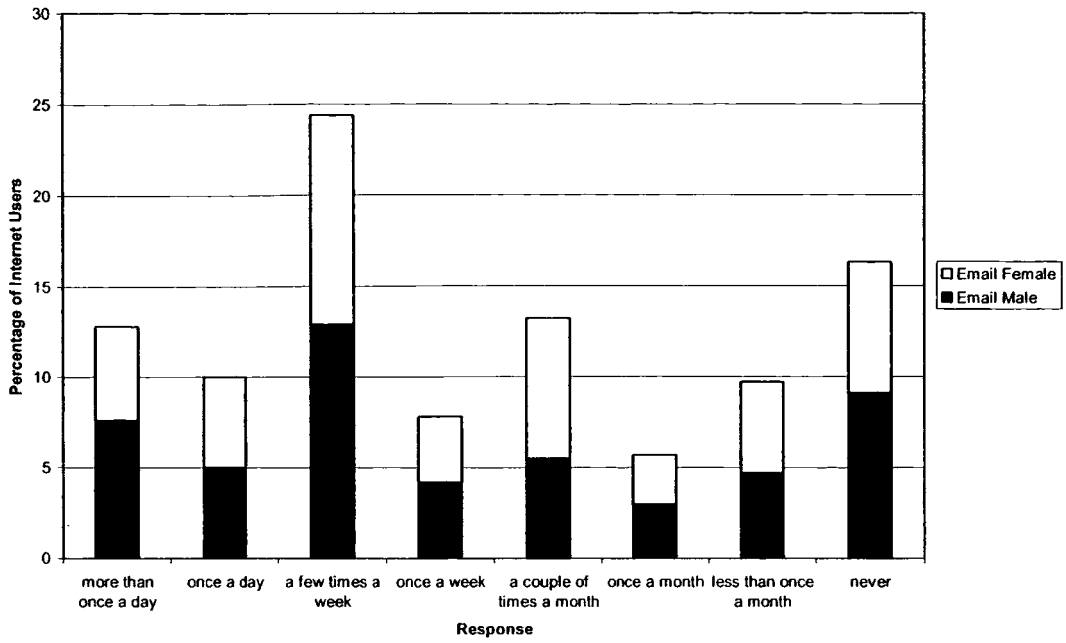
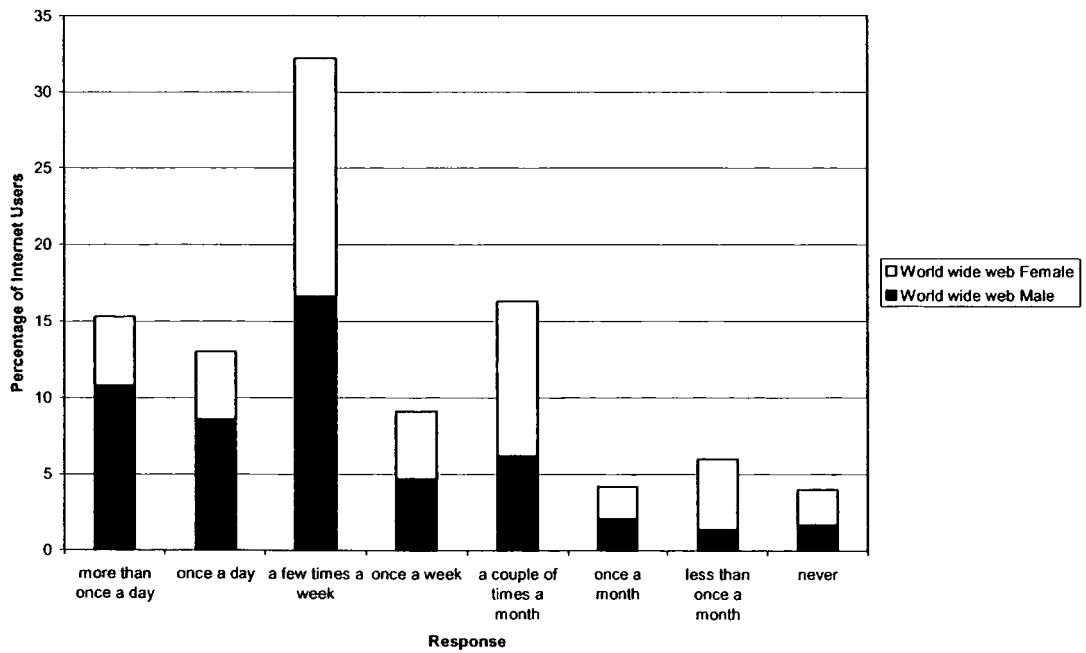


Figure 2b: How often do you use the Internet for the world-wide web?



### **Do you have a personal email address? Do you have a web-page?**

73.9 percent of Internet users stated that they had a personal email address and 16.6 percent stated that they had a personal web page.

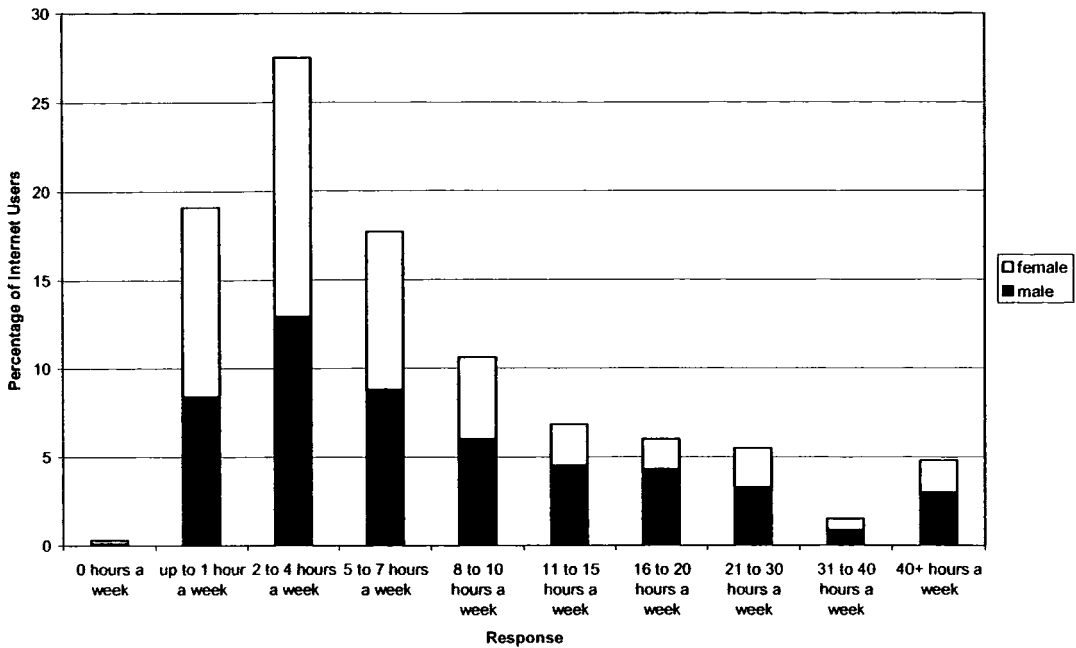
In terms of gender, it was found that 77.6 percent of male Internet users stated that they had an email address, as opposed to 70.1 percent of females. This was a significant difference ( $\chi^2=7.691$ ,  $df=1$ ,  $p<.01$ ). In addition, 22.3 percent of male Internet users stated that they had a web page as opposed to 10.4 percent of females and this difference was also significant ( $\chi^2=27.077$ ,  $df=1$ ,  $p<.0005$ ).

### **For how many hours a week do you use the Internet?**

Figure 3 shows that the modal response to this question, given by 27.5 percent of Internet users, was 2 to 4 hours a week. Interestingly, a sub-group of 4.8 percent claimed to spend more than 40 hours a week using the Internet.

With regard to gender differences, the number of hours per week that males stated they used the Internet was significantly higher than the number that females stated they used it ( $U=122823.5$ ,  $p<0.0005$ ).

Figure 3: For how many hours a week do you use the Internet?



### For what purposes do you use the Internet?

Participants could tick as many answers to this question as were appropriate. There was no difference in the mean number of purposes for which boys and girls stated that they used the Internet. This was 3.1 for both genders.

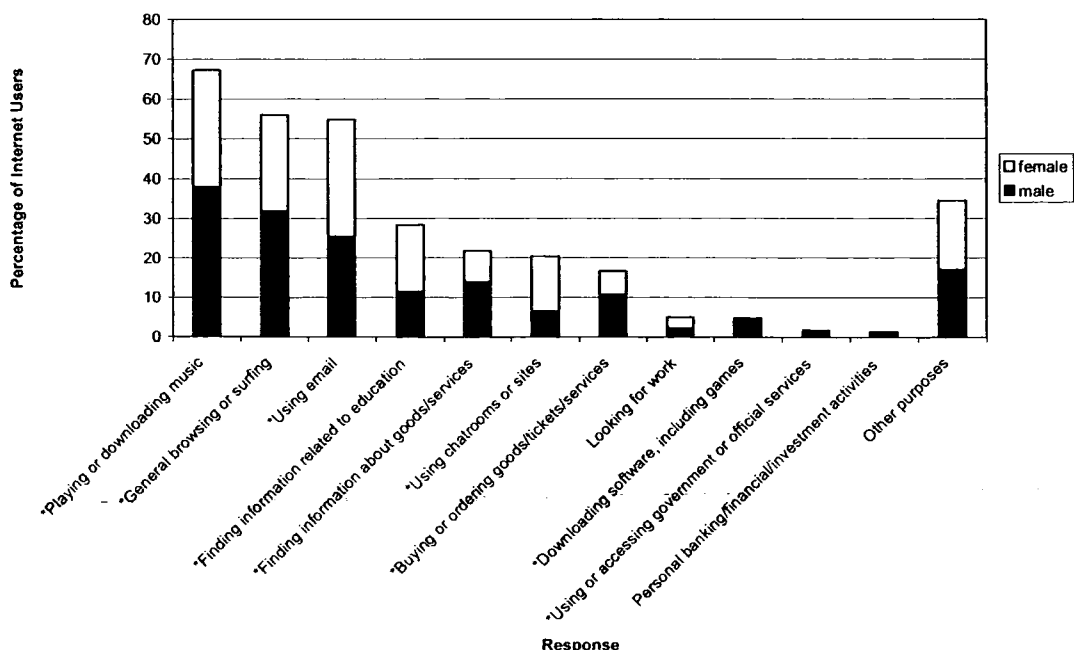
Figure 4 shows that the most common use of the Internet stated was for playing or downloading music (67.3 percent), followed by general browsing or surfing (56.0 percent) and then using email (54.8 percent). There was then a big drop to the next most common usage, which was for finding information related to education (28.2 percent). Many participants indicated that they also used the Internet for 'other purposes'. These commonly included instant messaging, using auction sites, using discussion forums/newsgroups/usenet and playing games.

There were significant associations between gender and many of the purposes of Internet use. Boys stated more often than girls that they used the

Internet for the following purposes: playing or downloading music ( $\chi^2=14.972$ ,  $df=1$ ,  $p<.0005$ ), general browsing or surfing ( $\chi^2=12.579$ ,  $df=1$ ,  $p<.0005$ ), finding out information about goods and services ( $\chi^2=16.868$ ,  $df=1$ ,  $p<.0005$ ), buying or ordering goods, tickets or services ( $\chi^2=14.186$ ,  $df=1$ ,  $p<.0005$ ), downloading software, including games ( $\chi^2=26.795$ ,  $df=1$ ,  $p<.0005$ ) and using the Internet for using or accessing government or official services ( $\chi^2=10.823$ ,  $df=1$ ,  $p<.005$ ). However, girls more frequently than boys stated that they used the Internet for: using email ( $\chi^2=17.658$ ,  $df=1$ ,  $p<.0005$ ), finding information related to education ( $\chi^2=22.103$ ,  $df=1$ ,  $p<.0005$ ) and using chat rooms or sites ( $\chi^2=44.219$ ,  $df=1$ ,  $p<0.0005$ ).

Unsurprisingly, given the participants' age, there were no significant associations between gender and use of the Internet for the following purposes: personal banking/investment/financial activities, looking for work and other purposes.

Figure 4: For what purposes do you use the internet?



### **How do you find out about new web-sites/web pages?**

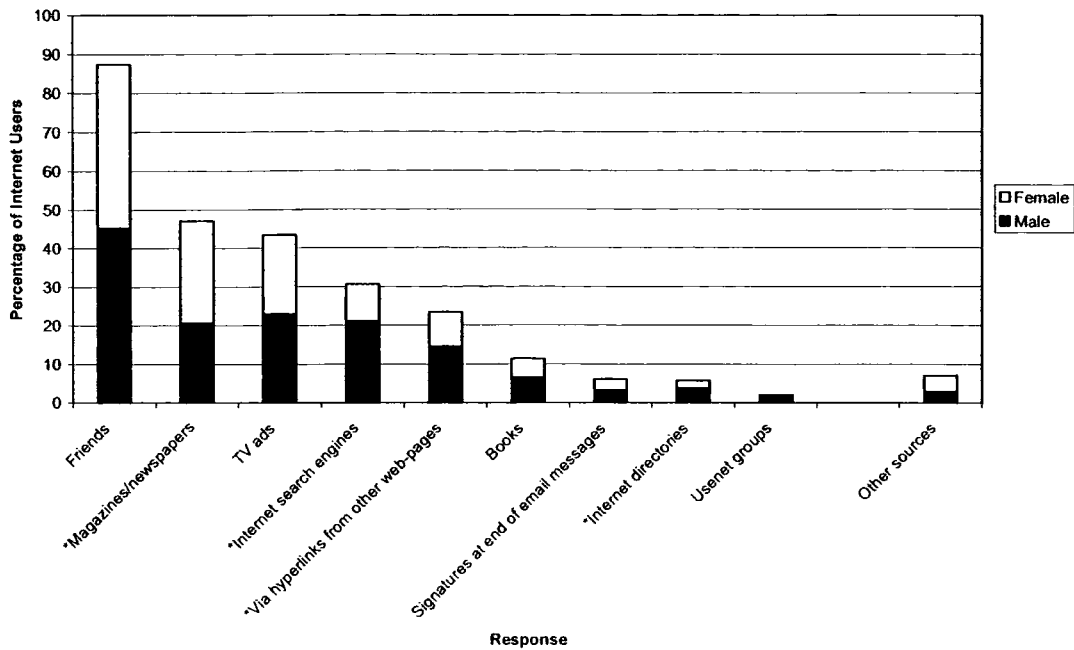
Again, more than one response to this question could be given and Figure 5 indicates those offered. The mean number of ways in which boys stated that they found out about new web sites or web pages was 2.7 and for girls was 2.5. This difference was not significant.

By far the most common method of finding out about new web sites and web pages described was from 'from friends' with 87.3 percent of the sample giving this answer. The next most common response, which was 'from magazines/newspapers' was considerably less popular with 47.0 percent of the sample stating that they used this source.

There were significant gender differences in whether participants stated that they found about new web-sites/web pages via hyperlinks from other web pages ( $\chi^2=12.602$ ,  $df=1$ ,  $p<.0005$ ), from Internet search engines ( $\chi^2=52.745$ ,  $df=1$ ,  $p<.0005$ ) and from Internet directories ( $\chi^2=4.451$ ,  $df=1$ ,  $p<.05$ ). Boys stated that they used these methods in more cases than girls. However, there were gender differences in the opposite direction for finding out about new web sites/web pages from magazines/newspapers ( $\chi^2=25.947$ ,  $df=1$ ,  $p<.0005$ ).

There were no significant differences between the genders for the following methods of finding out about new web-sites/web pages: from friends, from books, from Usenet groups, from signatures at the end of email messages, from TV ads and from other sources.

Figure 5: From where do you find out about new web-sites/web-pages?



### At which locations have you accessed the Internet?

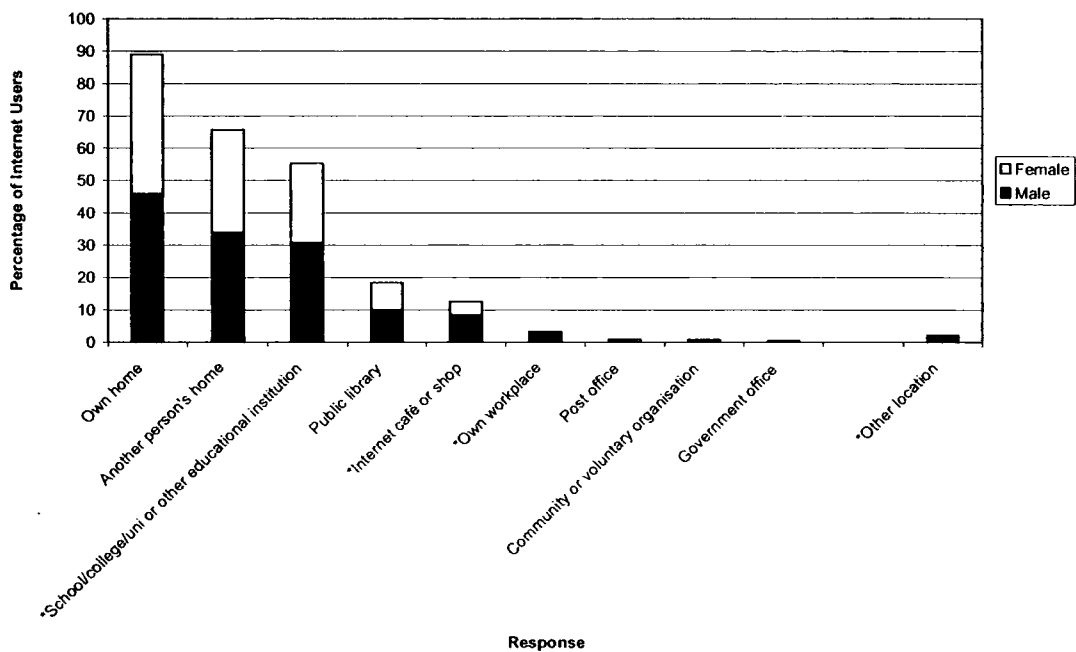
Again more than one answer to this question could be given and Figure 6 shows those that were received. The mean number of locations from which participants stated that they accessed the Internet was 2.5, and there was no significant difference between the genders for this result.

Most participants (88.9 percent) stated that they used the Internet at home, although it was also accessed by many in a variety of other settings as well, especially 'at another person's home' and at a 'school/college/university or other educational institution'.

There were significant associations between gender and location of Internet use for the following locations: own workplace ( $\chi^2=9.866$ ,  $df=1$ ,  $p<.005$ ), school/college/university ( $\chi^2=6.591$ ,  $df=1$ ,  $p<.05$ ), Internet café or shop ( $\chi^2=14.3$ ,  $df=1$ ,  $p<.0005$ ) and other locations ( $\chi^2=5.876$ ,  $df=1$ ,  $p<.05$ ).

Boys indicated that they used the Internet at these locations more often than girls. There were no significant differences between the genders for the remaining locations of Internet use: own home, another person's home, public library, community or voluntary organisation, government office and post office.

Figure 6: At which of the following locations have you accessed the Internet?

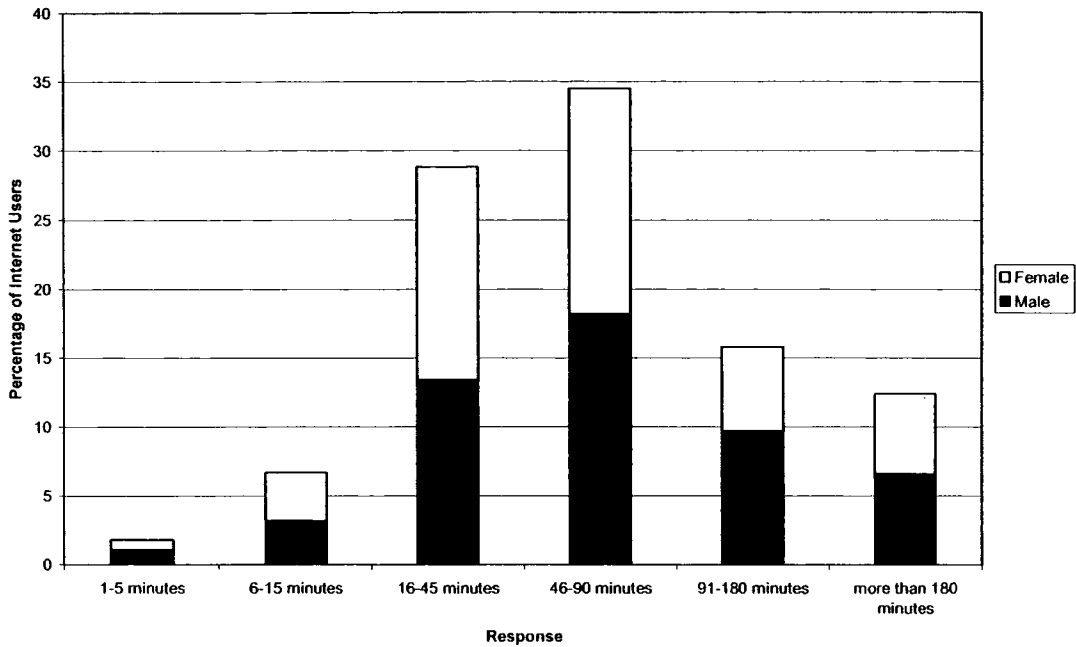


### How long does your typical Internet session last?

Figure 7 shows the duration of respondents' typical Internet sessions. The modal response here was 46-90 minutes, with 34.5 percent of the sample stating that they used the Internet for this length of time. It is interesting to note that a considerable proportion of the participants (12.4 percent) stated that their typical Internet session lasted more than 180 minutes.

There was a significant difference in the duration that males and females said that their typical Internet sessions lasted ( $U=130407.5$ ,  $p<.05$ ). Males indicated that their sessions lasted longer than those of females.

Figure 7: How long does your typical Internet session last?



### How often do you find good or helpful web sites?

Figure 8a shows the frequency with which Internet users stated that they found good or helpful websites and Figure 8b shows how often they felt confused by the Internet. The most common response to the question of how often good or helpful websites were discovered was 'sometimes' (40.3 percent). Overall, the participants seemed to indicate that decent websites did exist: in total 87.7 percent of the sample said that they found good or helpful websites either 'frequently', 'sometimes' or 'occasionally'. This leaves 12.3 percent who stated that they found good or helpful websites 'rarely' or 'almost never'. There was no difference between the genders for this variable.

## How often do you feel confused when you use the Internet to find information?

Most Internet users (32.8 percent) stated that they rarely felt confused when using the Internet to find information. Only 9.0 percent claimed that they frequently felt confused. However, gender differences were found in the answers to this question. Females stated that they felt confused more often than males when using the Internet ( $U=113192.00, p<0.0005$ ).

Figure 8a: How often do you find good or helpful websites?

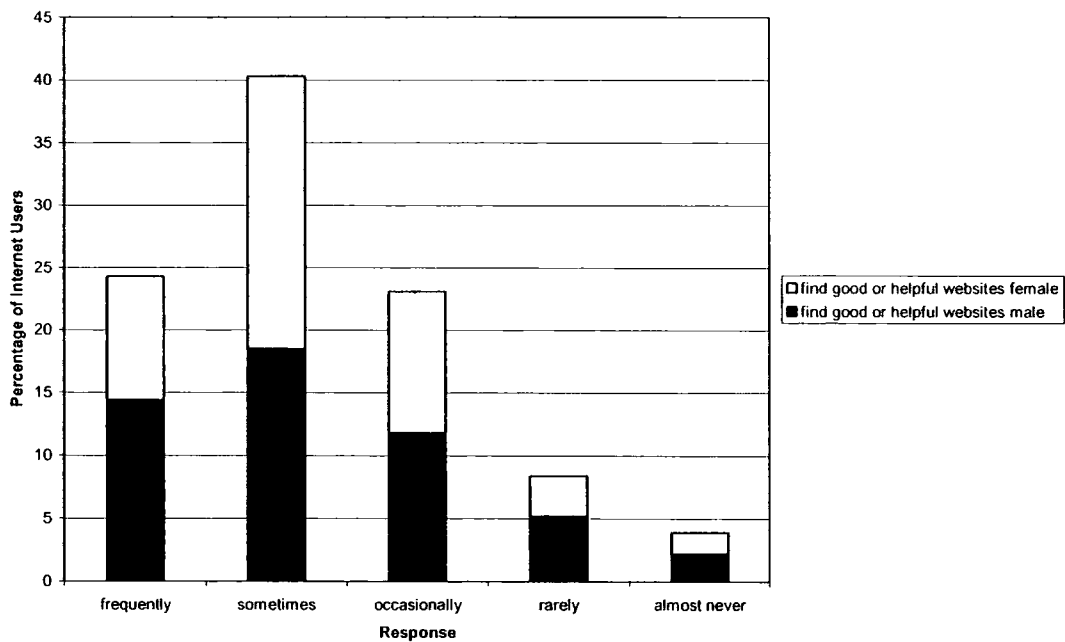
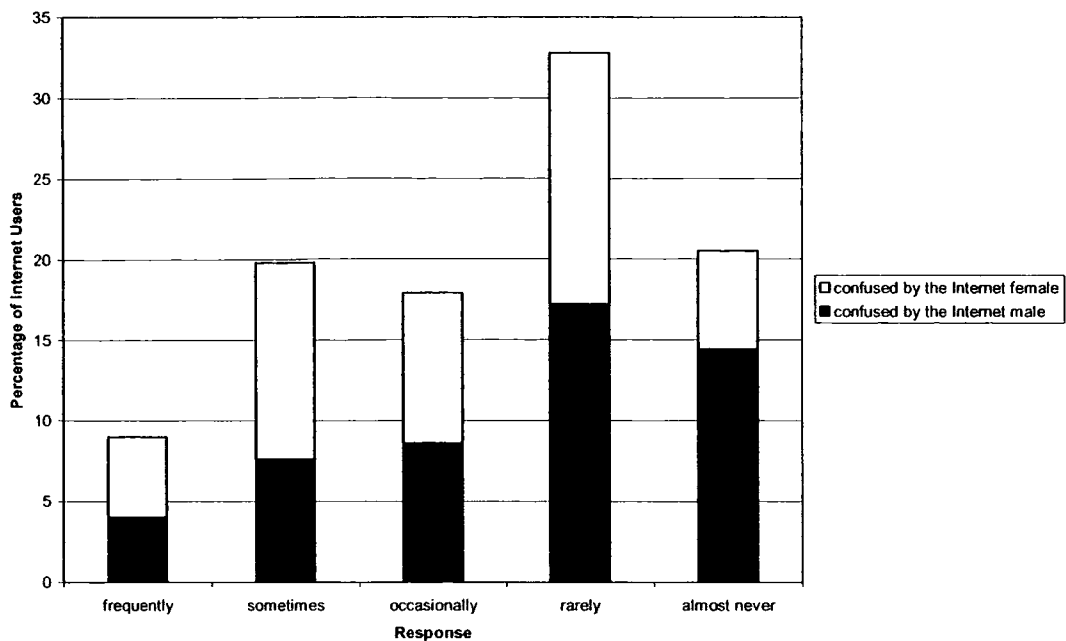


Figure 8b: How often do you feel confused by the Internet?



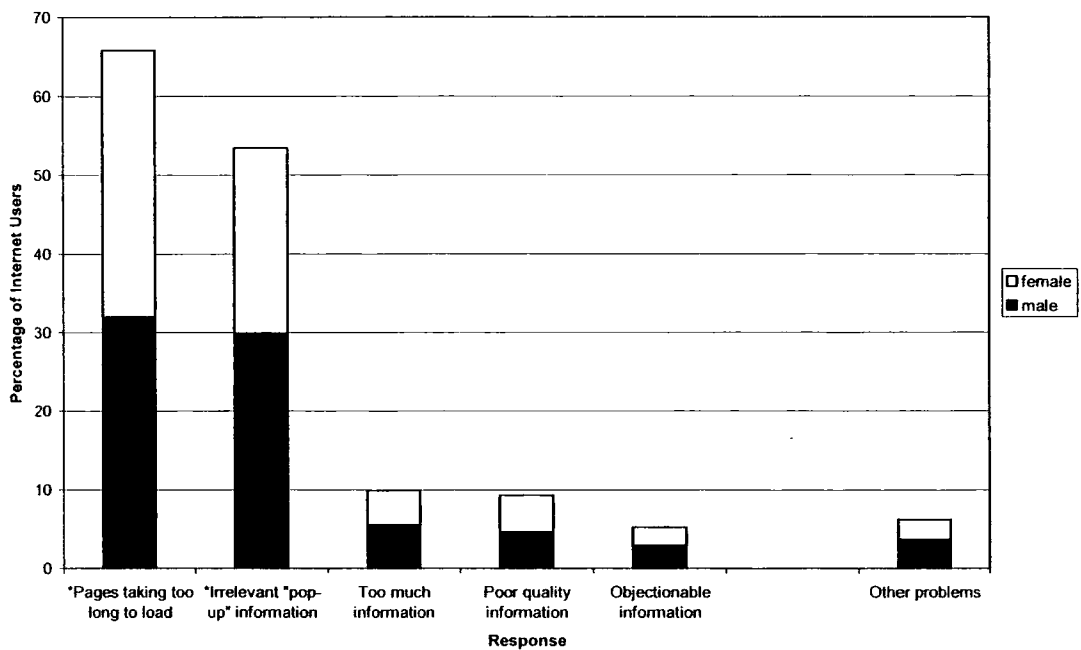
### What do you consider are the biggest problems with the Internet?

Figure 9 indicates what children considered to be some of the faults of the Internet. More than one response could be endorsed for this question. There was no difference between males and females in the mean number of problems that they reported associated with Internet use. This was 1.5 for both genders.

'Pages taking too long to load' seemed to be a problem for most participants with 65.8 percent of the sample stating that this concerned them. 'Irrelevant pop-up information' was next with 53.4 percent of participants considering this a problem. Only a minority of the sample reported that the remaining issues, which all related to the type of information available on the Internet, were important. Interestingly, only 5.2 percent of Internet users stated that they considered 'objectional information' one of the biggest problems with the Internet.

There were gender differences between the participants for 'Pages taking too long to load' ( $\chi^2=8.873$ ,  $df=1$ ,  $p<.005$ ) and 'Irrelevant pop-up information' ( $\chi^2=8.672$ ,  $df=1$ ,  $p<.005$ ). Girls thought that the first issue was more of a problem than boys, but the opposite was true for the second issue. There were no gender differences in the other responses: poor quality information, too much information, objectionable information and other problems.

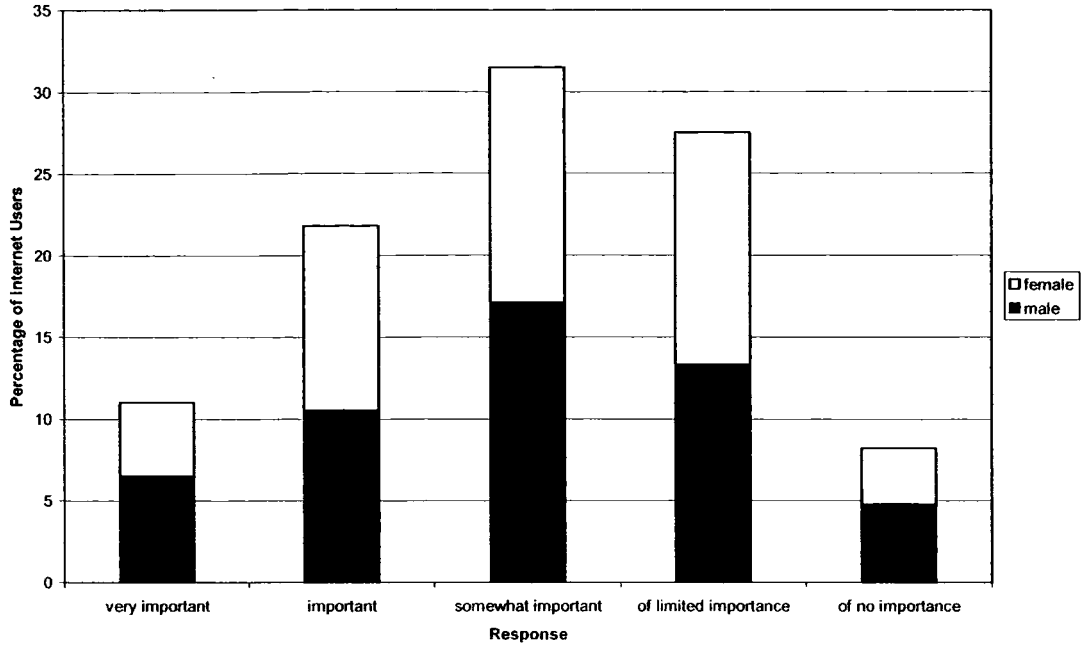
Figure 9: What do you consider are the biggest problems with the Internet?



### How important do you consider the Internet to be in your life?

Figure 10 shows that most participants (31.5 percent) thought the Internet was somewhat important, although notable numbers also considered the Internet more or less important than this. Males did not perceive the Internet to be any more important to their lives than females. It is worth noting that a notable minority of participants thought that the Internet was of no importance (8.2%) or of limited importance (27.5%) to their lives.

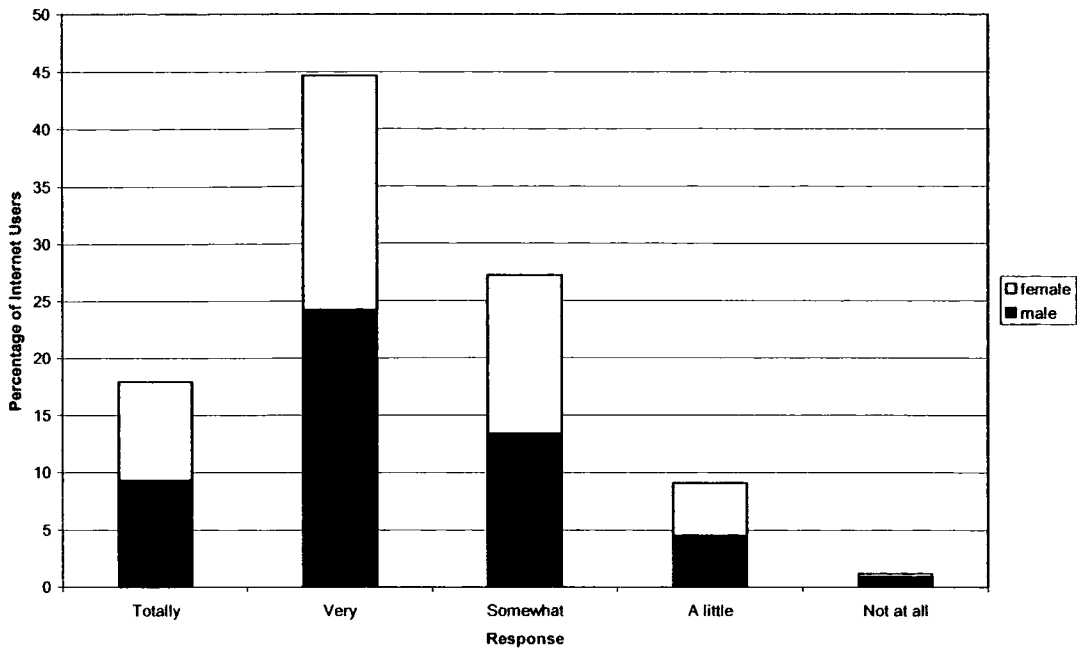
Figure 10: How important do you feel the Internet is in your life?



### How satisfied are you with the Internet?

Figure 11 shows that 89.7 percent of participants were 'totally', 'very' or 'somewhat' satisfied with the Internet, with the most common response being 'very' satisfied (44.6 percent). Only 10.3 percent were either 'a little' or 'not at all' satisfied. There was no significant difference between male and female responses for this measure.

Figure 11: How satisfied are you with the Internet?



## Mobile phone related questions

### Do you own a mobile phone?

Of the participants that answered this question (96.0 percent of the sample), 86 percent stated that they owned a mobile phone with significantly more females (89.7 percent ) claiming that this was the case than males (82.3 percent) ( $\chi^2 = 14.54$   $p < 0.001$ ).

### What are your reasons for not owning a mobile phone?

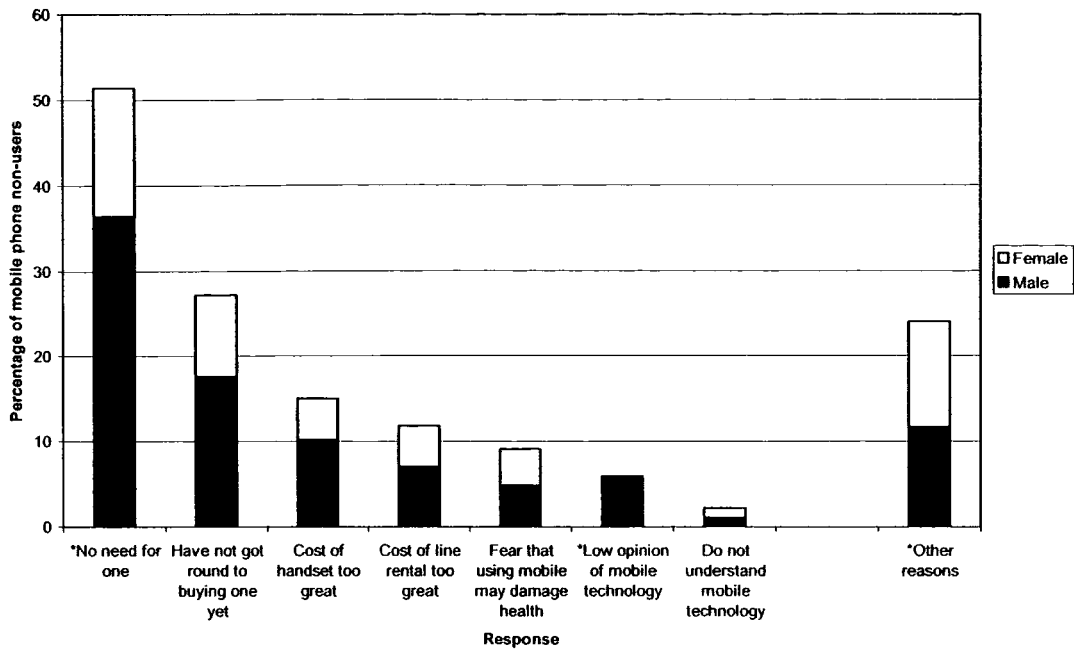
Participants who did not own a mobile phone were asked why this was the case. Respondents could give more than one answer to this question. Figure 12 shows that by far the most common reason stated for not owning a mobile phone was 'No need for one.' This reason was given by 51.3 percent of the non-mobile phone owning group and males were more likely than females to

give this reason ( $\chi^2=5.756$ ,  $df=1$ ,  $p<.05$ ). There was a considerable reduction in the proportion of participants who reported the next most common reason for not owning a phone, which was 'have not got round to buying one yet' (27.1 percent). Cost considerations were related to the next two most important reasons that some individuals offered: 'cost of handset too great' (15 percent) and 'cost of line rental too great' (11.8 percent). Only a small minority of children were concerned about health risks associated with mobile phones: just 9.1 percent gave 'fear that using mobile may damage health' as a reason for not owning one.

The children surveyed in this sample also seemed quite happy with current mobile technology: only 5.9 percent stated that their low opinion of it was the reason that they did not own a mobile phone (all of these were males) and only 2.1 percent of the sample stated that they did not understand mobile technology. 24.1 percent of mobile phone non-users said they had 'other reasons' for not owning a mobile phone and females were more likely to give this reason than males ( $\chi^2=4.734$ ,  $df=1$ ,  $p<.05$ ).

There were no gender differences in the following reasons for non-use of a mobile phone: 'cost of handset too great', 'cost of line rental too great', 'have not got round to it yet', 'do not understand mobile technology' and 'fear that using mobile phone may damage health'.

Figure 12: What are your reasons for not owning a mobile phone?

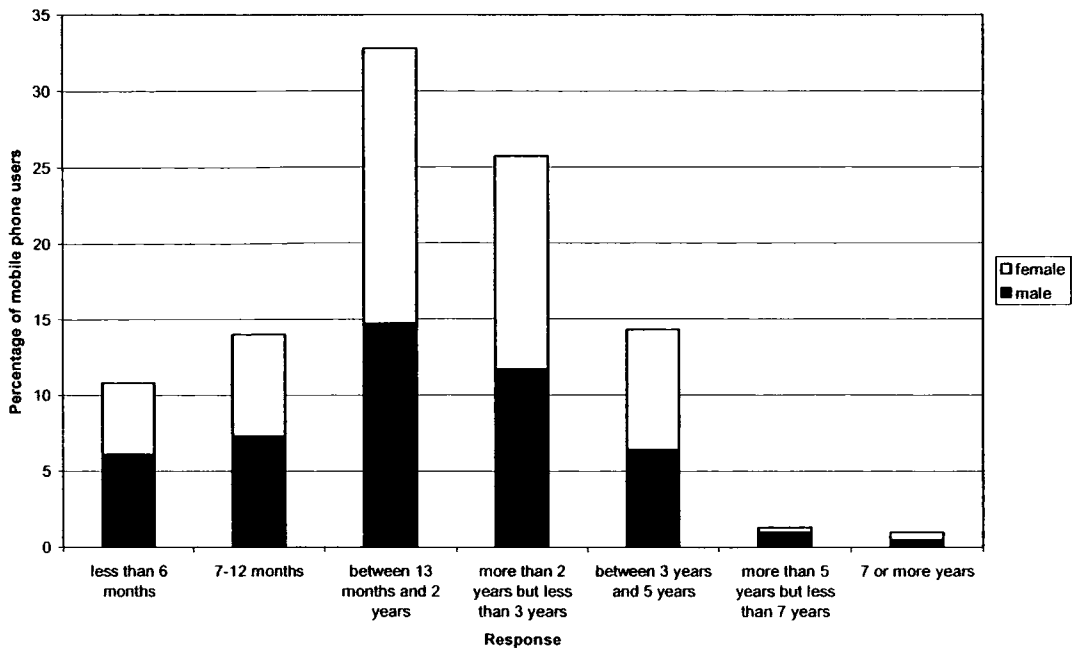


Children who owned a mobile phone were then asked a number of questions concerning their use. These included the following:

### For how long have you owned a mobile phone?

Figure 13 shows that the modal response to this question was 'between 13 months and 2 years'. This was reported by 32.9 percent of mobile phone users. However, considerable proportions of participants stated that they had owned a phone for longer or shorter periods of time than this. Only 2.3 percent of mobile phone owners stated that they had owned a phone for periods of time greater than 5 years. There was no significant difference between the amounts of time that males and females stated that they had owned a mobile phone.

Figure 13: For how long have you owned a mobile phone?



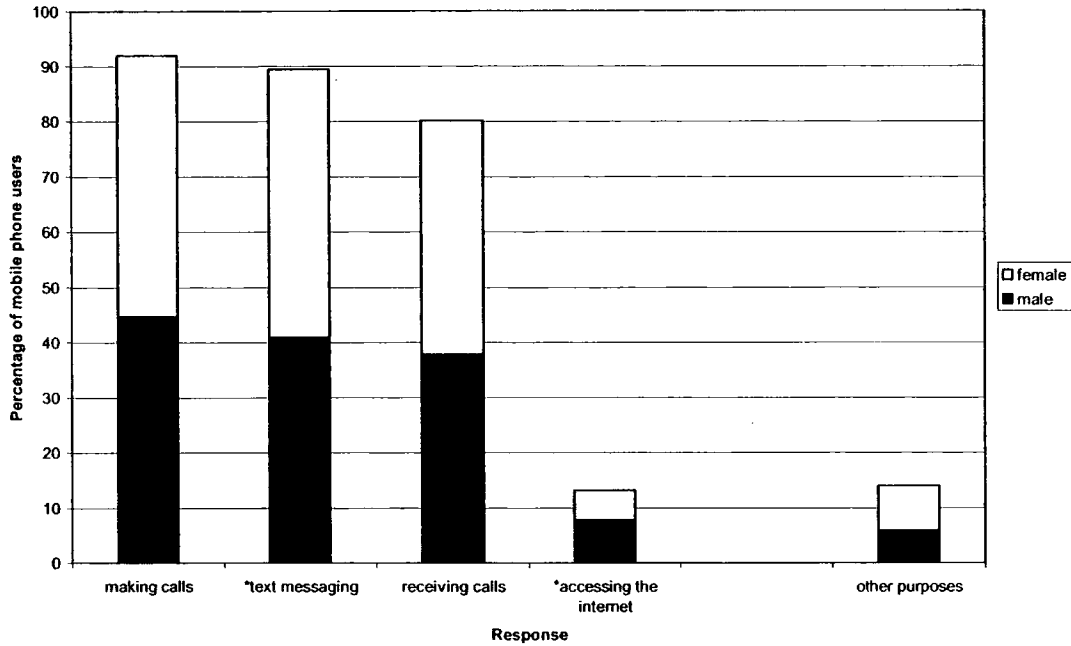
**For what purposes do you use your mobile phone?**

Figure 14 shows that 'making calls' (91.9 percent) and 'text messaging' (89.5 percent) were the most common uses of mobile phones reported, with 'receiving calls' (80 percent) coming shortly behind these. Whilst there were gender differences in the proportions of participants who stated that they used their phones for text messaging (males: 84.8 percent, females: 93.8 percent;  $\chi^2=23.366$ ,  $df=1$ , two-tailed  $p<.0005$ ), there were no gender differences in the proportions who stated that they used their phones for making or receiving calls.

Only 13.1 percent of the secondary-school students surveyed stated that they used their mobile phones to access the Internet, with significantly more males stating that they did this (males: 15.9 percent, females: 10.6 percent;  $\chi^2=6.799$ ,  $df=1$ , two-tailed  $p<.01$ ). 14 percent of the children surveyed

stated that they used their mobile phones for purposes other than the ones given on the 'tick-box' list. These commonly included playing games or getting new ring tones.

Figure 14: For which purposes do you use your mobile phone?



**How often do you use your mobile phone for these purposes?**

Figure 15a shows that the modal category for 'making phone calls' was 'a few times a week but less than once a day' (26.3 percent) although a similar proportion (23.6 percent) also stated that they made phone calls '2-5 times a day'. There was no association between gender and frequency with which respondents stated that they undertook this activity.

Figure 15b shows that the modal category for sending text messages was '2-5 times a day' (27.2 percent) with females stating that they sent more messages than males (U=119262, p<0.0005). It should also be noted that a considerable minority (7.9 percent) of participants stated that they sent more

than 16 text messages per day and the majority sent at least one text message a day (68.3 percent).

Figure 15c shows that whilst the modal category for accessing the Internet was 'never' (78.3 percent), some participants did indicate that they used their mobile phones for this purpose (U=132673,  $p < 0.05$ ). Overall, males indicated that they used their mobile phones for accessing the Internet more often than females.

Figure 15a: How often do you use your mobile phone for the following purpose?

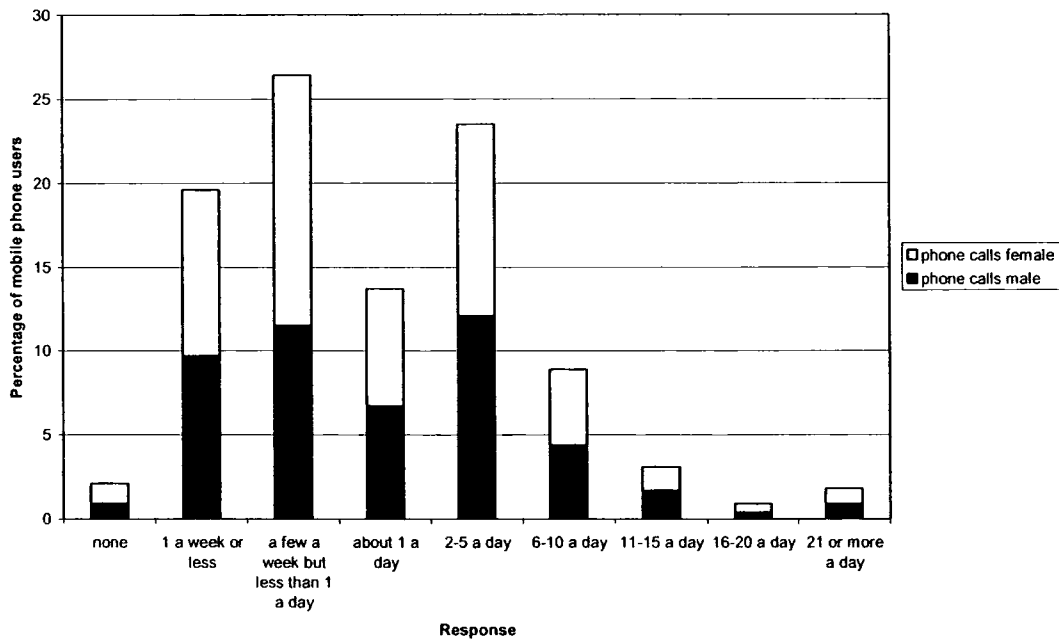


Figure 15b: How often do you use your mobile phone for the following purpose?

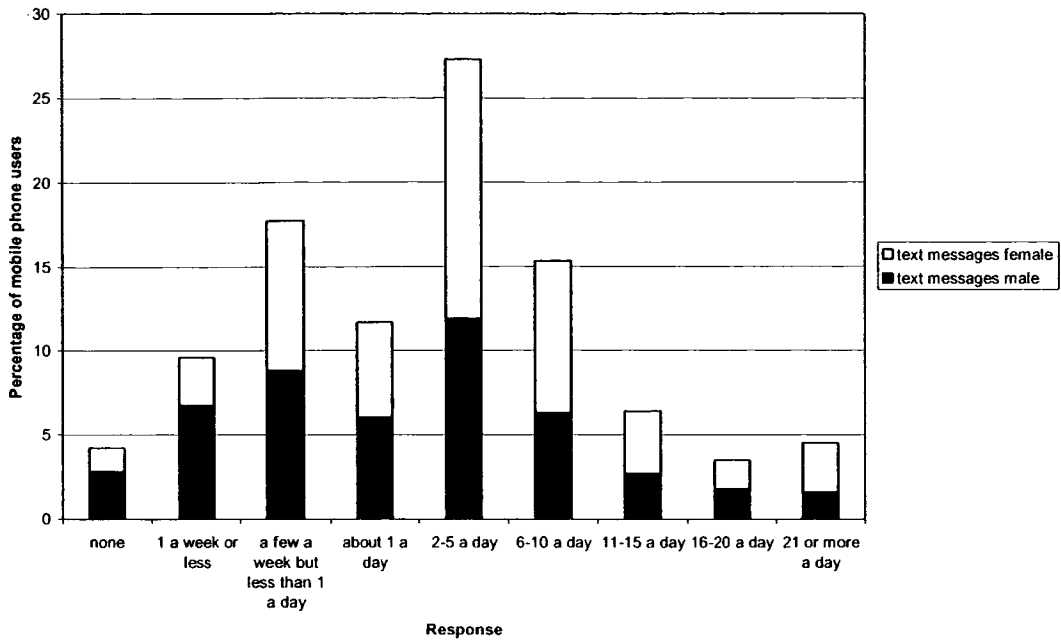
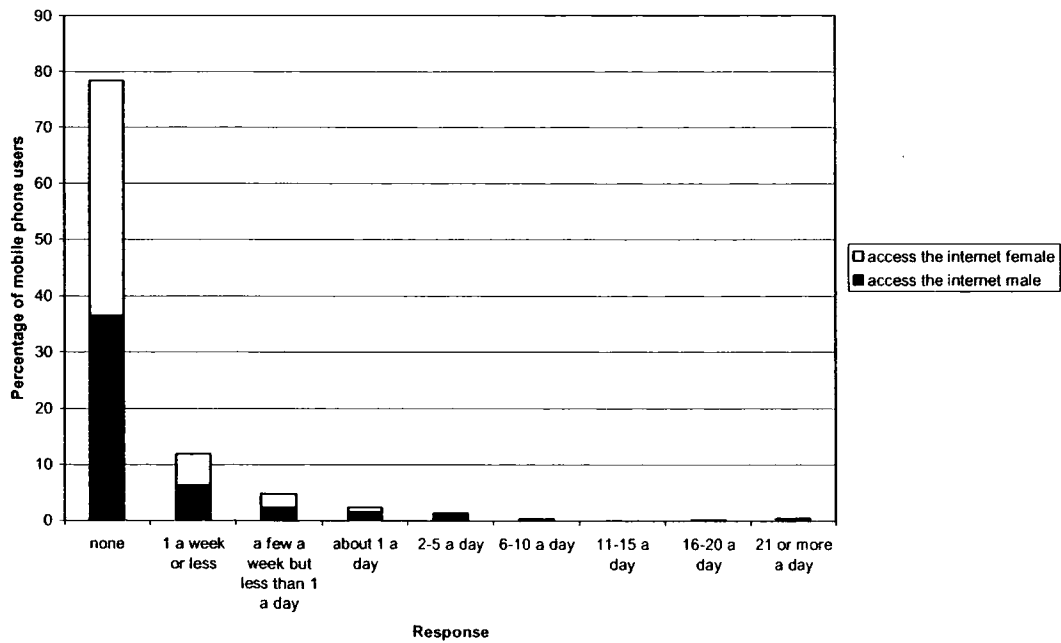


Figure 15c: How often do you use your mobile phone for the following purpose?



## **Relationships between questions concerning communication activities using the Internet and mobile phones**

Table 2 shows correlations between questions asked on the survey which concerned communication via the Internet and mobile phones. Significant correlations in the table are unshaded, whilst non-significant results are shaded.

Results have been taken as significant if  $p < .05$ . However, it is recognised that it could be argued that a Bonferroni correction should be made to the significance level chosen for the following correlations, as many calculations have been made which increases the chance of achieving significant results. If a Bonferroni adjustment were to be made, it is acknowledged that none of the correlations in this section would achieve significance. Therefore, correlations which achieve a significance of  $p < .05$  should be taken as merely suggestive of particular patterns rather than strong evidence that the variables involved are related.

Pairwise, rather than listwise exclusion of cases with missing values was used in calculating the correlations below. That is, cases which had a missing value for the particular correlation being calculated were excluded from that correlation only, rather than being removed from all correlations. The choice of pairwise rather than listwise exclusion was made because many items were included in the questionnaires used for the studies, and many correlations were calculated. This meant that many cases had at least one missing variable somewhere, simply due to the size of the survey. Therefore, to have deleted any case with a missing value from all correlations calculated would have greatly limited the sample size.

In general, the results in Table 2 show that there are many small, but significant positive correlations between questions relating to Internet and mobile phone communication.

Question	Do you use the Internet for email?	Do you have a personal email address?	How often do you use the Internet for email?	Do you use chat rooms or sites?
Do you have a mobile phone?	$\Phi = .090, p < .005$	$\Phi = .056, p > .05$	$r_{pb} = .081, p < .01$	$\Phi = .078, p < .05$
Do you use your mobile phone for making calls?	$\Phi = .056, p > .05$	$\Phi = .071, p < .05$	$r_{pb} = .066, p < .05$	$\Phi = .029, p > .05$
Do you use your mobile phone for receiving calls?	$\Phi = .219, p < .0005$	$\Phi = .127, p < .0005$	$r_{pb} = .117, p < .0005$	$\Phi = .090, p < .01$
Do you use your mobile phone for text-messaging?	$\Phi = .231, p < .0005$	$\Phi = .166, p < .0005$	$r_{pb} = .160, p < .0005$	$\Phi = .101, p < .005$
How many phone calls do you make using your mobile phone?	$r_{pb} = -.023, p > .05$	$r_{pb} = -.061, p > .05$	$r_s = .090, p < .01$	$r_{pb} = .073, p < .05$
How many text messages do you send using your mobile phone?	$r_{pb} = .090, p < .01$	$r_{pb} = .052, p > .05$	$r_s = .196, p < .0005$	$r_{pb} = .125, p < .0005$

Table 2: Correlations between questions concerning Internet and mobile-phone communication

Table 3 shows the percentages of respondents who stated that they were both Internet users and mobile phone owners, just one of these, or neither, by gender. The results indicate that just less than three-quarters of both males and females were users of both the Internet and mobile phones, just less than a quarter were users of one or the other, and very few were users of neither. A chi-squared test carried out on this data revealed that there was no association between gender and whether or not participants used both, one or neither of these technologies.

Table 4 shows the same results by ethnic group. This indicates that most members of most ethnic groups stated that they were users of both technologies (although it should be noted that numbers of all but those in the 'White' group were low). A chi-squared test carried out on this data revealed that there was no association between ethnicity and whether participants stated that they used both, one, or neither of these technologies.

Gender	Use Internet and/or mobile phone (percent)		
	Neither	One of the two	Both
Male	3.9	23.6	72.5
Female	3.0	24.1	72.9

Table 3: Percentage of respondents who stated they were both Internet users and mobile phone owners, just one of these, or neither, by gender

Ethnic Group	Use Internet and/or mobile phone (percent)		
	Neither	One of the two	Both
White	3.1	23.7	73.2
Asian	0	0	100
Arabic	0	0	100
Oriental	0	0	100
African/Afro-Caribbean	8.3	25.0	66.7

Table 4: Percentage of respondents who stated they were both Internet users and mobile phone owners, just one of these, or neither, by ethnic group

## Discussion

### Internet Use

The major finding of the survey was that the majority of children (83.0 percent) between the ages of 11 and 16 considered themselves Internet users, although there was also a sizeable minority (17.0 percent) who did not.

With regard to non-users of the Internet, the most common reason given by children for their lack of usage was associated with restricted access to facilities. Non-users of the Internet also less frequently indicated that they had their own computer at home than users of the Internet. By the same token, Nachmias et al. (2000) found that accessibility to the Internet from home influenced young people's use of the Internet most. These findings indicate that ease of access may be a key issue in regard to encouraging young people to use the Internet.

Some non-Internet using children may have felt that they did not have access to the Internet because the facilities were genuinely not available to them. In addition, this may have been a problem with perception: perhaps children did not know where they could access the Internet, and so it is actually their awareness of this that needs that to be raised. In any case, the government should take note of this issue given their goal of ensuring that everyone who wanted it would have access to the Internet by 2005. Whilst there are indications that access to the Internet has improved since the survey was conducted, it cannot necessarily yet be argued that the government has achieved its aim. For example, the 'Cabinet Office Website' claims that there is now universal access to the Internet (Cabinet Office, 2005) and '10 Downing Street', the Prime Minister's Office Website reported on 21<sup>st</sup>

February 2005 that the UK has the most extensive broadband coverage of the G7 nations. It also stated that 96 percent of households now have access to broadband, with more than 6 million subscribers (10 Downing Street, 2005). However, it is not the case that all children have equipment such as modems and computers which enable access to the Internet at home. This is an important issue given that Internet-using children most commonly stated that they accessed the Internet at home (88.9%), that 94.7% of Internet-users stated that they had a computer at home, and that the chief reason for lack of use of the Internet was 'do not have a computer at home' (35.7%).

A basic lack of interest or motivation amongst non-users seemed to be another noteworthy reason for them not using the Internet. This is also an area that needs addressing: do the positive applications of the Internet need to be promoted amongst children?

Encouragingly, a lack of knowledge about how to use the Internet did not seem to be a concern for most non-users so it would seem that children are quite well informed about how to use this technology. It was also encouraging to see that reasons associated with cost were not given as a cause for concern by non-users, although this could reflect the fact that children's parents would probably be responsible for paying the expenses associated with the Internet rather than the children themselves.

For the main part, children seemed to be sensible about their use of the Internet, keeping it to a reasonable amount. Most used it to access the web or check email 'a few times a week' and the modal response to the question, 'For how many hours a week do you use the Internet?' was '2 to 4 hours'. This was lower than Nachmias et al's (2000) finding that the average

number of hours per week students spent using the Internet was 5 hours 50 minutes. In general, users seemed to be comfortable with the Internet and found it a useful technology. The majority of both male and female users were able to find good or helpful websites at least 'occasionally' and only 9.0 percent were 'frequently' confused when using the Internet to find information. Furthermore, the vast majority of Internet users were at least 'somewhat' satisfied with it.

Young people in this survey stated that their Internet sessions typically lasted for between 46 and 90 minutes and most children (31.5 percent) considered the Internet 'somewhat' important in their lives (only 11.0 percent considered it 'very' important). Nevertheless, there was a small sub-group (4.8 percent) of participants who used the Internet for more than 40 hours per week and 12.4 percent stated that their typical Internet session lasted more than 180 minutes. So, a minority of children may use the Internet excessively. Groups such as these should be studied further to see if they differ from other young people their age in terms of sociability, educational achievement, or indeed any other aspect of personal development. It may even be possible that some of the participants who used the Internet excessively would meet the criteria for a compulsive Internet use pattern as described by Greenfield (1999). Interestingly, he found that approximately 6 percent of the Internet users he surveyed could be described as compulsive users, a proportion which is not dissimilar to that which used the Internet for more than 40 hours per week in this sample.

Most participants (88.9 percent) stated that they used the Internet at home. This figure is congruent with a finding from Nachmias et al.'s (2000)

sample which indicated that 82.4 percent of children learned to use the Internet at home. However, only 17 percent of Nachmias et al.'s sample stated that they learned to use the Internet at school, a figure which is much smaller than the 55.3 percent who stated that they used the Internet at educational institutions in this sample.

The survey data indicated that participants used the Internet for a mean of 3.1 purposes: to an adult this might seem relatively few but on further consideration, it is unlikely that children would need to use the Internet for as many functions as an adult and it is encouraging that children may be using the Internet for a small variety of purposes at least. Furthermore, many of the functions of Internet use described in the survey such as 'general browsing or surfing' or 'looking for information related to education' could incorporate a number of activities.

Many, but by no means all, children used email. Of the 83.0 percent of children that classed themselves as Internet users, 54.8 percent said that they used the Internet for this purpose. Similarly, Haste (2005) found that 56 percent of her whole sample used email on their computers daily. However, nearly three-quarters of Internet users in the present survey stated that they had a personal email address which implies that some children have email addresses which they do not use. In comparison, Nachmias et al. (2000) found that only 57.1 percent of so-called 'Internet users' had a personal email account.

Internet users tended to state that they used the Internet for email 'a few times a week', and a sizeable proportion of young Internet users also stated that they frequented chat rooms or sites. However, this was rather

fewer than indicated using email: only around a fifth of Internet users said that they used the Internet for chat rooms. In addition, 16.6 percent of Internet users in this survey stated that they had a personal web page. This is almost twice the proportion that Nachmias et al. (2000) found (8.5 percent). The difference in results may exist either because English young people are more likely to have web-pages than those in Israel, or because Nachmias et al.'s survey was conducted some time previously to the present one.

### **Mobile phone use**

The main finding from the survey was that 86.0 percent of children stated that they owned a mobile phone. This is close to the figure found for 11-16 year olds by the Childwise Monitor Winter 2003-2004 survey, which was that 84 percent of 11-16 year olds owned a mobile phone. However, it is rather higher than that found in the NOP survey (2001) which was that only 77 percent of 14-16 year olds owned a mobile phone. Haste (2005) also found a higher proportion of mobile phone users than was found in either the present survey, or the Childwise Monitor Survey (97 percent of females and 92 percent of males aged 11-21 years had access to a mobile phone). This may be because some of her sample was older than that used in other surveys, and also because Haste's survey is more recent than others. Furthermore, young people in Haste's survey were asked whether they had access to a mobile phone rather than if they owned one which would increase the proportion who answered 'yes'. In general, the figures from all the surveys taken together seem to suggest that mobile phone ownership amongst young people has risen since the year 2000, and that at the present time the vast majority of

young people of secondary school age and above either own a mobile phone or have access to one.

Ling (2000) described a number of reasons why the mobile phone may be so important to young people. These reasons relate to availability, emancipation, security and micro-coordination. Ling also stated that this technology could be a crystallisation symbol for adolescents in terms of identity, and argued that even if young people do not wish to own a mobile phone themselves, the existence of this technology within society allows them to define their identity in terms of being against it. Charlton et al. (2002) also discussed how in some cases young people might even be excluded from social groups because of lack of mobile phone ownership, and argued that children who do not use mobile phones might be less likely to become adept at using other communication technologies. In addition, Haste (2005) discussed how the majority of young males and females stated that they felt 'safer and more secure' (p.2) by owning a mobile phone and that their parents worried about them less if they had a phone with them.

The vast majority of mobile-phone owning children used their phones for making and receiving calls and text messaging. In particular, this survey highlighted the massive popularity of text-messaging: 89.4 percent of mobile-phone owning participants said that they used their phone for this purpose. This echoes the findings reported by the Childwise Monitor Winter 2003-2004 Survey and Haste (2005) who also indicated the current massive popularity of text messaging. However, if anything the Childwise survey indicated that text messaging was even more popular than was found here: 97 percent of mobile phone owners in the Childwise survey stated they used their phone for this

purpose. The increased percentage for the Childwise Survey could indicate that text-messaging has increased in popularity even since the present survey was conducted.

Most mobile phone-owning participants stated that they used their phones to make a few phone calls a week, which is probably less than the two calls a day that the NOP survey (2001) stated that its participants made. Participants also indicated that they used their phones to send a few text messages a day. This figure is congruent with that found by the NOP survey which was that young people tend to send two or three text messages daily, and perhaps also with Haste (2005) who found that 54 percent of young people sent more than five text messages a day.

The use of mobile phones for accessing the Internet was found to be much less popular than either making or receiving calls or text messaging in the present survey. Only 13.1 percent of the secondary-school students surveyed stated that they used their mobile phones for this purpose. Haste (2005) argued that young people may prefer to use a personal computer rather than a mobile phone for the Internet, and the results from this survey certainly support this.

## **Gender differences**

### **Internet use**

The results highlighted a possible gender gap in terms of use of and competence with the Internet between males and females. Despite the fact that both sexes considered the Internet to be equally important to their lives, were equally satisfied with it, found good or helpful websites equally often and reported equal numbers of problems associated with Internet use, boys (85.7 percent) were nevertheless significantly more likely to indicate that they were Internet users than girls (80.2 percent). Furthermore, although boys and girls stated that they used the Internet equally frequently for email purposes, males indicated that they used it more for the worldwide web. Also, males were more likely than females to have their own email address and web page. In addition, the number of hours per week that males stated that they spent using the Internet was significantly higher than the number that females stated they used it. Also, males stated that their typical Internet sessions were longer than those of females, and females stated that they were more often confused when using the Internet to find information than males.

Cone (2001) discussed a number of reasons why a gender gap in the use of computer technology might exist and these may also relate to Internet use. For example, she suggested that schools and society encourage boys to gain experience with computers more than girls, contributing to the latter group's lack of confidence and lower use of this technology. Along similar lines, Shashaani (1997) described how parents often transfer the belief to their children that males are more able than females in technological and scientific fields. Furthermore, Cone discussed how many children's first

encounter with computers is via video games. These often involve themes of competition, power and violence which might appeal to males more than females. Therefore, girls might become disinterested by computers at an early age contributing to a gender gap in later use of this technology.

Turkle (1988) also described some reasons why computing may have become seen as a 'male' activity in society, stating that women may have observed that the most successful male computer users are those that anthropomorphise their machines. Because of the value women place on human relationships, Turkle argued that: 'The computer is rejected [by women] as a partner in a 'close encounter.' ... they define themselves as relational women in terms of what the 'serious' computer users are not.' (p.44).

In another study, Herring et al (1995) found evidence of online subjugation of women's voices by men so it is also possible that females are discouraged from using the Internet because they find the virtual world a hostile place to be. It may also be the case that the prevalence of pornography discourages girls from using the Internet more than boys, especially when they are young. Finally, Heichler (1997) suggested that there might be a lack of female-oriented content on the worldwide web.

It is also possible that some of the supposed gender difference in Internet use found in this survey actually reflects a reporting bias for this activity. Boys may have a tendency to exaggerate their competence and use of the Internet, or girls may under-report their use of this technology. Unfortunately, a literature search did not reveal any evidence regarding this subject so more research needs to be carried out in this area.



As well as discussing reasons why gender gaps in overall levels of computer use might exist (which could lead to gender gaps in Internet use), researchers have also made a number of suggestions for reducing gender gaps in computer use (which correspondingly might contribute to the closing of a gender gap in Internet use). For example, Cone (2001) suggested that the production of video and computer games that emphasise 'choices, social interaction, good narration and challenges' rather than 'intense competition and repetitive action' (p.185) might provide girls with positive first experiences regarding computer use. The same study also suggested that employment of single-gender computer classes at schools might encourage girls to take up computing at a young age. Chen (1986) stated that computer experiences should be structured to provide interaction with others as some girls may be discouraged by computer work because they see it as devoid of social contact - a point which relates to Turkle's (1988) argument that women do not like computing because it is an activity devoid of social interaction. It could be particularly easy to encourage girls to use the Internet in this way, as many aspects of Internet use such as email, newsgroups and chat rooms are inherently sociable.

Gender differences in specific aspects of Internet use will now be considered. There were no gender differences in the reasons given for not using the Internet except for the reason 'no one in household knows how to use it'. Females were more likely to give this as a reason than males. This might reflect the fact that the male respondents themselves were the ones in the household who knew how to use the Internet which would mean that they would be less likely to give this as a reason for non-use of the Internet.

Females indicated that they were more likely to use the Internet for educational purposes than males which supports findings by Odell et al. (2000), Weiser (2000) and Durndell and Haag (2002); and also email, which is congruent with findings by Odell et al. (2000), the Pew Internet and American Life Project (2000), Sherman et al, (2000), Weiser (2000), Jackson et al., (2001) and Chak and Leung (2004). This latter finding is interesting as males were found to be more likely to have an email address than females in this survey. Therefore, it might be the case that some males have an email address that they do not actually use.

Results from this study also supported findings made by other researchers that suggested that males were more likely to use the Internet to research purchases and/or to shop (Odell et al., 2000; LaFerle et al. 2000; Weiser, 2000), download games (Odell et al., 2000; LaFerle et al. 2000; Weiser, 2000; and Chak and Leung, 2004) and copy music (Odell et al., 2000). Differences in the purposes of Internet use by males and females might relate to traditional gender stereotypes or to differences in technical knowledge between girls and boys encouraged by society as discussed by Cone (2001). In addition, female reactions to computers as discussed by Turkle (1988), as described previously may be important.

These gender differences in purpose of use are certainly worthy of continued investigation not least because research in this field may indicate ways of closing the gender gap in overall Internet use. For example, taking Chen's (1986) suggestion that computing classes which focus on communication might appeal to girls, lessons in using email could be used to

encourage girls to develop an initial interest in Internet technology which would hopefully encourage greater overall use in later years.

With regard to location of Internet use, the survey indicated that the mean number of locations at which children accessed the Internet was 2.6 for boys and 2.4 for girls. Again, as with results regarding purposes of Internet use this may at first seem like only a small number. However, given that the most common place for young Internet users to access the Internet was at their own home (88.9 percent) it is probably just the case that most children do not find it necessary to access the Internet at many other locations. Indeed, 94.7 percent of Internet users stated that they had a computer at home.

Another interesting result that arose from examination of gender differences with regard to location of Internet use was that males indicated that they were more likely to access the Internet at school than females. This finding might reflect that amongst children in the UK, males may have more access to computer facilities than females at school, or might also reflect that they are more inclined to make use of the facilities that are available. Also, females may not be encouraged as much as males to use the resources that are available to them.

### **Mobile phone use**

A gender divide in some aspects of mobile phone use was indicated by the survey. A significantly larger proportion of girls (89.7 percent) than boys (82.3 percent), stated that they owned a mobile phone. This finding is congruent with that from the Childwise Monitor Survey for Winter 2003-2004, which

found that amongst 5-16 year old children, girls were more likely to be mobile phone owners than boys. Unfortunately, a comparison with figures concerning gender differences in mobile phone ownership amongst 11-16 year olds who took part in the Childwise survey cannot be made, as these specific figures are not available. This difference is also congruent with that found by Haste (2005) who reported that 97 percent of females had access to a mobile phone compared to 92 percent of males. Taken together these figures suggest that the difference in mobile phone ownership between young males and females in the UK may be around 5 percent in the favour of females.

Female mobile phone owners were also more likely to indicate that they used their mobile phones for text messaging (males: 84.8 percent, females: 93.8 percent) and also indicated that they sent more messages per day than males. These differences are congruent with those from the Childwise Monitor Survey which found that 92 percent of 5-16 year old girls used their phones for text messaging compared to 89 percent of boys and that 71 percent of 5-16 year old girls stated that text messaging was the main use of their phone compared to 48 percent of boys. In addition, Ling (2000) found that girls could sometimes outpace boys in the uptake of mobile technology. He stated that by the year 2000, girls, and especially younger girls, were quicker than boys to adopt mobile phones.

Taken together, these findings could again reflect the importance that females place on relationships: girls may be more likely than boys to be mobile phone owners because communication is more important to them. Indeed, Ling (2000) stated: 'for the boys, the physical mobile terminal seems to have an importance where with girls the device seems more important as a

link to others' (p.2). Oksman and Rautianen (2003), also argued that traditional gender differences exist within mobile phone culture. They stated that the literature relating to this subject shows that boys like to keep up-to-date with mobile technology whereas the interactive side of mobile phone use appeals more to girls. This may also explain why girls were more likely than boys to use their mobile phones for text messaging and also sent more messages than boys. In further support of this point, non-mobile phone owning males were more likely than non-mobile phone owning females to state that they did not own a phone because they had no need for one (which may imply socialising is less important to them), and because they had a low opinion of current mobile technology (which may imply that they view mobile phones as a technical rather than social item).

The fact that a greater proportion of girls than boys stated that they owned a mobile phone could also reflect a situation described by both Lobet-Maris (2003) and Oksman and Rautianen (2003), that young girls may be likely to acquire their first mobile phone as a security measure from their parents, allowing them autonomy, whilst at the same time ensuring that they are contactable. In fact, security may be a reason that many young people in general are given their first mobile phone by their parents (Oksman and Rautiainen, 2002). Haddon (2002) quoted a longitudinal study conducted by BTEExact which stated that 70 percent of parents mentioned 'emergencies' as a reason for initially obtaining a mobile phone for their children under 16 years of age.

Males were more likely than females to use their mobile phone for accessing the Internet and also did this more often. These findings support

those from the Childwise Monitor Survey from Winter 2003-2004 which indicated that 25 percent of 5-16 year old boys with a mobile phone used it for the Internet, as opposed to 12 percent of girls. The reasons for a bias towards male use of the Internet in general that were discussed previously may well apply to accessing the Internet via a mobile phone as well.

## **Communication**

### **Reasons for the popularity of Internet communication**

Computer-mediated communication (CMC) via the Internet may be popular amongst young people for a number of reasons. Tapscott (1998) argued that one appealing characteristic of this for young people is that it can be immediate. In addition, Baym (2002) discussed how the Internet reduces geographical constraints on communication, reduces the cost of communicating over large distances, and allows friendships and social groups to form, which provide similar benefits to Internet users that offline equivalents would.

Baym (2002) also discussed how CMC provides reduced social cues affording the user a higher degree of privacy and a lower sense of social risk and accountability which allows communicators to experiment with multiple identities. (These issues will be described in further detail later in this thesis). This characteristic may be particularly attractive to young people if Eriksson's (1968) theory of psychosocial stages is accepted which asserts that adolescence is a time in which experimentation with identities is of great importance if teenagers are to ultimately achieve stability in this regard. Orleans and Laney (2000) also argued, 'the opportunity to try on a variety of

personas is one of the attractions and hallmarks of online activity. This can contribute to the development of social competency among adolescents.' (p.65) Similarly, Tapscott (1998) stated that the Internet is a medium which allows adolescents to explore the self and establish an identity and has even averred that cyber-dating may act as a prelude to real romantic relationships amongst some adolescents.

CMC may also appeal to adolescents because of its often light-hearted nature. Baym (2002) cited Danet et al. (1997) who stated that computer communication is inherently playful because of its 'ephemerality, speed, interactivity, and freedom from the tyranny of materials' (p.66).

Furthermore, CMC does not communicate power and prestige which may be an attractive characteristic for young people. This may mean that their opinions can hold more weight than they would do in the 'real' world. Tapscott (1998) argued that adults may take a well-reasoned argument more seriously online if the receiver of it is not aware, for example, that it comes from a fourteen-year-old girl.

### **Reasons for the popularity of mobile phone communication**

Grinter and Eldridge (2001) conducted some research using questionnaires, data logging and discussion groups, with ten children (five girls and five boys) about their use of mobile phones, principally for text-messaging. The children were 15 to 16 years of age and were from secondary schools in south Cambridgeshire in England. From their research, Grinter and Eldridge drew conclusions about some of the reasons why young people may prefer to use mobile phones instead of other communication devices in various situations.

For example, they discussed how one use was for 'hypercoordination', defined as 'the practice of frequently revisiting and revising arrangements with others using a mobile.' (p.277). For example, if someone was late for a trip to the cinema, others in a group would be informed using a mobile phone.

These researchers also found that young people used one of the supposed shortcomings of text-message communication, namely a small character limit, to their advantage. Interviewees described how this feature allowed them to forego conversational etiquette and get directly to the point of a conversation, thus saving them time and money. Furthermore, the use of text-messaging also prevented those contacted from wandering 'off-topic' in the case of people who talked too much, and reduced sensations of awkwardness in the case of those who were difficult to talk to.

Participants in Grinter and Eldridge's study also stated that the discreetness of text messaging meant that it could be used when other forms of communication were inappropriate or impossible, for example when the person being contacted was in a public situation.

Grinter and Eldridge also described how children stated that they may text-message or even make voice calls to their friends' mobiles in order to arrange landline phone calls as this allowed them to avoid talking to their friends' parents, whilst at the same time taking advantage of the lower cost of landline phone calls. In fact, teenagers in the study said that they used text messages to control their mobile phone expenditure generally, as these are charged at a fixed rate, compared to phone calls which vary in cost with duration and distance. Similarly, Livingstone and Bober (2003) found that text messaging was often preferred to voice calls for financial reasons in research

involving 14 focus groups with children. Economic considerations may also be one reason why more text messages were sent than voice-calls made amongst respondents in the present survey.

Livingstone and Bober (2003) also described how one participant in their focus-group research stated that making voice calls or sending text messages via mobile phones was useful because they allowed communication from any location. This leads to another obvious benefit of mobile phone communication: children can make private phone calls or send messages away from their parents' supervision.

Kasesniemi and Rautiainen (2001) also discussed the importance of text messaging to Finnish teenagers' lives. They stated that: '...message collecting, circulating chain messages and collective reading and composing, are means by which teens enact their own message culture' (p.182). Kasesniemi and Rautiainen also discussed how text messaging is useful for shy teenagers in social situations, stating that adolescents may often appear to have two personalities: a 'brave' one when they converse via text-message and a more reserved one during face-to-face communication. Thus, as with CMC, text messaging may be popular amongst adolescents because it mediates communication and reduces social risk.

Furthermore, as has been stated, adolescence is traditionally a time in which socialising becomes important, especially with the opposite sex, so communication via text-message for social purposes may be easier for young people who are developing social skills or who are shy. It may also give adolescents time to think about how best to phrase messages which communicate delicate subjects. Interestingly, Haste (2005) found that young

females have a greater preference than males for 'chatting up' by text message, whereas more males than females prefer to end relationships by text message. The theme of whether modern communication technology is more often employed amongst young people who are socially anxious or socially phobic will be the main focus of later chapters of this thesis.

It may also be the case that text-messaging is popular amongst adolescents because it allows them to transfer light-hearted messages that are not necessarily worth a phone call. In the latter regard, Danet's (1997) (cited in Baym, 2002) description of CMC's 'ephemerality, speed, interactivity, and freedom from the tyranny of materials' (p.66) could equally be applied to text messaging as to CMC.

### **Young people as Rational Actors**

The small but significant positive correlations between most of the questions relating to mobile phone and Internet use shown in Table 2 indicate that if young people use the Internet to communicate then they are also (slightly) more likely to use a mobile phone. That is, use of one of these forms of communication technology seems to encourage use of the other, rather than the use of one discouraging use of the other. This is congruent with Smoreda and Thomas's (2001) research which found that there is a tendency for people to use mobile phones, text messaging and email side-by-side and, notably, that those under the age of 25 years did this the most heavily.

The results shown in table 2 may also imply that some young people are more technologically inclined than others. These individuals use the different communication media more than those who are less technologically

inclined, accounting for the positive correlations. It may also be likely that these technologically inclined youngsters utilise the advantages of each type of communication device to fit different situations which is why they are both necessary.

Joinson (2003) has discussed the 'rational actor approach' (p.52) to the use of technology as described by Kling (1980) and Markus (1994) (cited in Joinson, 2003) and this may apply here. The 'rational actor approach' maintains that people use communication technology strategically to meet their different communication needs rather than technology itself determining people's behaviour (technological determinism). The results from this study may indicate that young people decide for themselves when and how best to use technology to suit the circumstances of the situation.

Thus, to give some examples, young people may make phone calls when they wish to reveal themselves socially with trusted others, text-messaging may be used to communicate brief, or humorous messages to peers or communicate delicate subjects, email may be used to communicate complex and in-depth messages with those who are geographically distant, and chat rooms may be used when the young person wants to have a light-hearted conversation with strangers.

Research provides some support for the idea that children use different types of technological communication to meet different social needs. For example, Livingstone and Bober (2003) found that their participants found email useful for a number of purposes, including: communicating cheaply with friends and relatives in other countries, sending longer messages, talking about personal issues, 'telling secrets', dealing with awkward situations such

as ending relationships and even communicating with celebrities. Conversely, they found that chat rooms were used by young people for other communication purposes such as 'messaging around', as a place for individuals' social networks to meet up, and interestingly, for seeking personal advice. One participant, Nina, described why chat rooms were useful for this final purpose by saying: 'If it was something you didn't want people to know about, then you'd probably say it in a chat room, because they don't know you, and you can just forget about it once it's gone' (p.19).

Other reasons why young people might choose to use the Internet to communicate are indicated by the previous discussion about reasons for the popularity of Internet communication. Young people may use the Internet where they wish to limit communication about power and status, where they wish to lower social risk and accountability, and where they hope to encourage light-hearted communication or experiment with their identities.

The discussion concerning the popularity of mobile phone use amongst young people also highlights some situations in which children may choose to use this technology to communicate. That is, mobile phones may be used for hyper-coordination, to arrange landline phone calls or in situations where location prevents use of other communication media. Text-messaging in particular may be used to control mobile phone expenditure, or when young people wish to get directly to the point of a conversation, thus saving them time and money. It can also be used for conversations with those who are difficult to talk to, by those who are shy or where the young person wishes to communicate discreetly. The focus group data discussed in Chapter 7 also

describes in more detail why young people choose to use both mobile phones and the Internet to communicate in different situations.

### **Gender and ethnic differences in the relationship between use of both the Internet and mobile phones**

A chi-squared test revealed that there were no gender or ethnic differences in whether participants stated that they used both the Internet and mobile phones, just one of these technologies, or neither. As there were large numbers of male (n=677) and female (n=658) schoolchildren participating in this research, the finding concerning lack of a gender difference in combined use of these technologies can be considered fairly robust and indicative that both male and female young people are equally likely to be users of both the Internet and mobile phones. However, the fact that few participants from ethnic groups other than “White” were available to survey means that it is difficult to speculate about the uniformity of both Internet and mobile phone usage between different ethnic groups.

### **Back from the beach and hanging on the telephone?**

It is interesting to note that the most common use of the Internet found in this study was for playing or downloading music (67.3 percent), followed by general browsing or surfing (56.0 percent) and then using email (54.8 percent). By contrast, Nachmias et al. (2000) and the U.S. Census Bureau (2001) both found that the most common use of the Internet was for communication, such as chat and/or email. It may therefore be possible that some of the communication function of the Internet is now being taken up by

text messaging and mobile phone calls. It may be that mobile phones are becoming more important to some young people than the Internet. Furthermore, this study indicated that a considerable minority of participants did not consider the Internet to be very important to their lives. These findings may to some extent support a position maintained by Wyatt, Thomas and Terranova (2002), that the importance of the Internet may have been overstated by some. In any case, the importance of mobile phones to young people should certainly not be underestimated by academics: it is possible that, in the words of Wyatt et al. (2002), some young people are now 'back from the beach'. Instead, in the words of Madell and Muncer (2004b) they may be 'hanging on the telephone'.

## **Conclusion**

The results of the survey reported in the present chapter indicated that most children used the Internet regularly, and were comfortable with and enthusiastic about it. However, a considerable minority of children considered themselves 'non-users' of the Internet. A perceived lack of access to facilities seemed to be the most important reason why young people did not use the Internet, and a lack of interest was also relevant. Of further concern was that there seemed to be something of a bias towards male use of the Internet.

Most children were mobile phone owners. Non-use of mobile phones seemed to be related to a perceived lack of need for this technology. There also seemed to be a small bias towards female ownership of mobile phones and the use of this technology for text messaging. These issues are further explored in the following chapter, which reports some research in which the

questionnaire described in this chapter was placed online to obtain supporting results.

Positive correlations between measures of communication using the Internet and mobile phones reported in this chapter suggest that young people use different forms of communication technology for different purposes. This might depend, for example, on the social, practical and financial circumstances of the situation. This supports the 'rational actor' approach to the use of technology. As both Internet and mobile phone communication can be employed to achieve different purposes, the result is that these technologies complement rather than substitute each other amongst young people. Finally, results from the survey suggest that mobile phones could be becoming more important to some young people than the Internet.

### **Final Note**

Papers concerning some of the research reported in this Chapter were published promptly in order that external agencies could make maximum use of the findings:

Madell, D. & Muncer, S. (2005) Internet and mobile phone communication: complementary activities amongst young people? A study from a 'Rational Actor' perspective. *Information, Communication and Society*, 8(1), 64-80.

Madell, D. & Muncer, S. (2004b) Back from the beach but hanging on the telephone? English adolescents' attitudes and experiences of mobile phones and the Internet. *Cyberpsychology and Behaviour*, 7(3), 359-367.

Madell, D. & Muncer, S. (2004a) Gender differences in the use of the Internet by English secondary school children. *Social Psychology of Education*. 7(2), 229-251.

## **Chapter 3**

### **An online survey to support the paper survey reported in Chapter 2**

The paper survey described in Chapter 2 was also placed online as it was felt that the Internet was another medium via which data could be collected that could support findings concerning young people's Internet and mobile phone use. This version of the questionnaire can be seen in Appendix II.

Methodological information concerning this survey is reported in this chapter, followed by a description of the results obtained, including gender differences, and a comparison with the results collected from the paper survey. An evaluation of the methodology used to collect results for this chapter is also presented, which includes a description of the advantages and disadvantages of collecting survey data online.

### **Method**

#### **Design and Measure**

The paper survey described in Chapter 2 was placed online. The websites of Local Education Authorities in the UK were found, and schools from around the country were contacted by email to ask if they would invite their pupils to complete the survey. Details of the schools who participated are discussed in a moment. Data were collected between February 2003 and April 2004.

## **Sample Information**

In total, 451 pupils from eighteen schools around the UK answered the online survey. Information about where the schools were located, including the proportion of participants taken from each of them is shown in Table 5. It is not necessarily argued that the sample is representative of the UK in terms of areas from which participants were taken, but it can be seen that efforts were made to include a number of different regions of the UK in the survey. In terms of gender, 49.7 percent of the participants were male and 47.5 percent were female, with the remaining participants not indicating their gender. The participants were aged between 11 and 18 years old, although only 1.5 percent of the participants were over the age of 16. The mean age of males was 13.7 years and of females was 13.5 years. Thus, in terms of age and gender, the sample was similar to that used in the paper survey described in Chapter 2.

In regard to ethnicity, the sample was fairly representative of the UK in terms of minority groups, but the proportion of individuals who stated that they were 'white' was possibly rather low to be representative of the UK in general. To illustrate, the National Statistics website estimated that in April 2001, 92.1 percent of the UK population could be described as 'white', compared to 72.1 percent who stated that their ethnic background was 'white' in this sample. This difference in proportions may be, in part, because a fairly high proportion of participants (18.4 percent) did not state their ethnic background on the questionnaire, and many of these individuals could have been from the 'white' ethnic group. The proportion of individuals who did not indicate their ethnic

background was considerably larger than that who did not state their ethnic background on the paper questionnaire (8.7 percent).

With regard to minority groups, the National Statistics web-site estimated that: 2.0 percent of the UK population could be described as 'Black Caribbean/Black African' or 'Black Other' compared with 2.7 percent described as 'African/Afro-Caribbean' in this sample, 4.0 percent could be described as 'Indian, Pakistani, Bangladeshi' or 'Other Asian' compared with 5.8 percent described as 'Asian' in this sample, and 0.4 percent could be described as 'Chinese' compared with 0.4 percent described as 'Oriental' in this sample. Finally, 0.7 percent of participants from this sample could be described as 'Arabic' but there was no comparative figure from the Office for National Statistics website for this group.

School Label	Area of UK in which school was located	Percentage of participants taken from this school
School A	Aberdeenshire	2.2
School B	Cornwall	16.6
School C	Cornwall	0.2
School D	Derbyshire	0.2
School E	Hampshire	8.2
School F	Hampshire	27.5
School G	Kent	.4
School H	London	1.6
School I	London	1.3
School J	London	5.8
School K	London	0.2
School L	Norfolk	2.2
School M	Nottinghamshire	2.9
School N	Nottinghamshire	12.4
School O	Nottinghamshire	0.9
School P	Surrey	1.3
School Q	Surrey	1.1
School R	West Yorkshire	9.1
—	Missing	5.8

Table 5: Areas in which schools who participated in the online survey were located.

## **Results**

The questions asked to the participants are in bold type throughout this section. Significant (two-tailed  $p < .05$ ) gender differences in the data are indicated in Figures 16, 19, 20, 21, 24, 27 and 29 with an asterisk by the relevant x-axis label. Internet related questions are considered first, followed by mobile-phone related questions. As in Chapter 2, it is acknowledged that multiple comparisons have been made with this data. This, arguably unfairly, increases the chances of obtaining significant results. Therefore, wherever multiple comparisons have been made and significant differences achieved, these should be taken as merely indicative of possible patterns within the data, rather than strong evidence that differences definitely exist.

### **Internet-related questions**

#### **Do you use the Internet?**

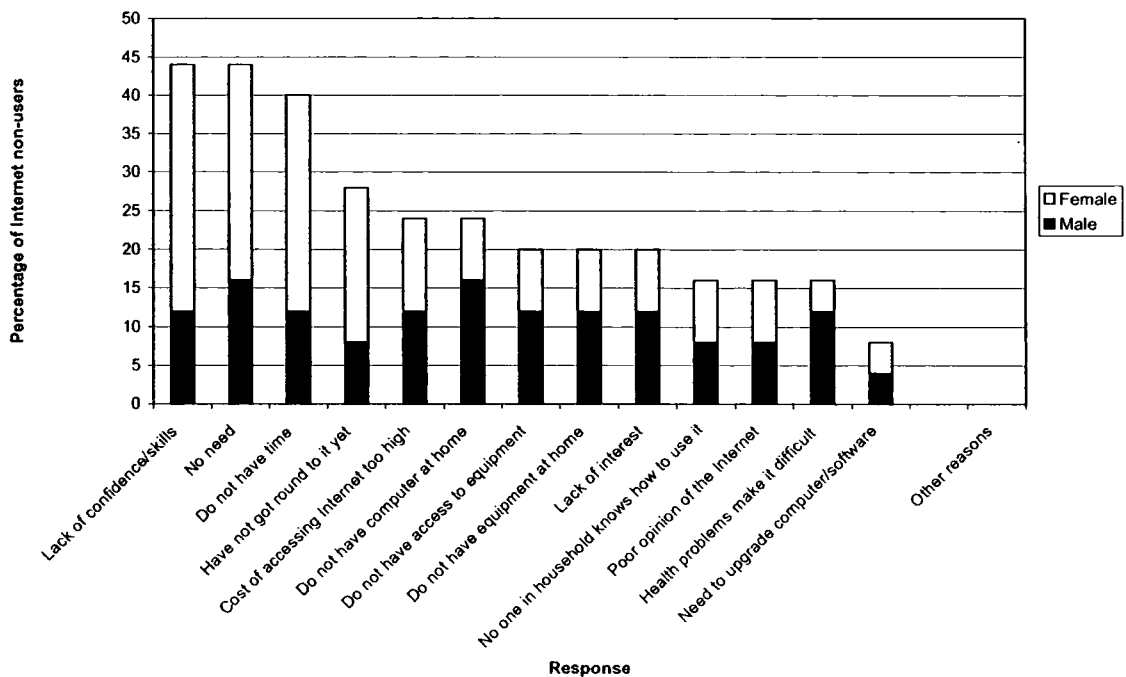
93.3 percent of the sample answered this question, and of these 94.1 percent stated that they used the Internet. There was no significant difference between the genders in their response. Although it might seem that the inclusion of this question was inappropriate because those who were participating in the survey must be Internet users by the fact that they were replying to it online, it was still felt appropriate to ask this question because some young people might have felt that although they were using the Internet on this specific occasion, in general they were not users of the Internet. For example, it might have been the case, that teachers at the respondent's school had forced them to answer the survey. This line of argument is

supported by the fact that not all of the respondents claimed that they were Internet users. However, it is acknowledged that, generally speaking, asking participants to complete the survey online would have increased the number of Internet users in the sample.

### What are your reasons for not using the Internet?

As with the paper survey, only Internet users were asked to complete the remainder of the Internet part of the survey, apart from this question which asked participants who did not use the Internet why this was the case. Figure 16 shows the responses given. More than one answer could be selected.

Figure 16: What are your reasons for not using the Internet?



In contrast to the results from the paper survey in which the most common reasons for non-use of the Internet were associated with a lack of access to facilities, figure 16 shows that the most common reason for non-use of the Internet by participants in the online survey was a 'lack of confidence/skills'. 44 percent of Internet non-users gave this as a reason for their lack of use. This percentage, and the fact that it is so much higher than the corresponding one for the paper survey (8.6 percent), may seem alarming at first. However, the actual number of participants who did not consider themselves Internet users was much smaller for those who completed the online survey than for those who completed the paper survey, as might be expected due to the methods via which data were collected. In this regard, 25 participants (5.5 percent of the whole sample) did not consider themselves Internet users in the online survey whereas in the paper survey this number was 226 (16.9 percent of the whole sample). As the great majority of those who participated in the online survey were Internet users, it may be the case that the few who did not consider themselves such were part of a minority group who have a strong aversion to or great difficulties with the Internet. It should be noted, however, that the actual number of respondents who stated that they had a lack of confidence or skills with the Internet was only 11.

A lack of motivation to use the Internet also seemed to be something of an issue for non-users in the online survey as it was for non-users in the paper survey. After 'lack of confidence/skills', the three next most common reasons for non-use of the Internet were: 'no need', 'do not have time' and 'have not got round to it yet' (although lack of interest came further down the

list). This again may support the idea that there was a minority group with a strong aversion to the Internet who participated in this survey.

There were no significant differences between the genders for any of the responses given.

### **Do you have a computer at home?**

90.0 percent of Internet users stated that they had a computer at home. This proportion was roughly similar to that of Internet users who indicated that they had a computer at home in the paper survey. There were no significant gender differences for this variable. Only 71 percent of those who considered themselves Internet non-users had a computer at home, which is close to the 75 percent of Internet non-users who stated that they had a computer at home in the paper survey. Again, as in the paper survey, there was a significant association between whether or not participants stated that they used the Internet and whether or not they had a computer at home ( $\chi^2=8.336$ ,  $df=1$ ,  $p<.05$ ).

### **How often do you use the Internet for email? How often do you use the Internet for the world-wide-web?**

As in the paper survey, Figures 17a and 17b show that the modal category for male and female use of both email and the world-wide web was 'a few times a week'. Also, as in the paper survey, there was no difference between the genders in how often they indicated that they used the Internet for email but males stated that they used the Internet for the world-wide web more often than females ( $U=13855$ ,  $p<.005$ ). Those who participated in the online survey

stated that they used the Internet more frequently for both email (U=205110.500, p<.005) and the world-wide web (U=185282.000, p<.0005) than those who participated in the paper survey.

Figure 17a: How often do you use the Internet for email?

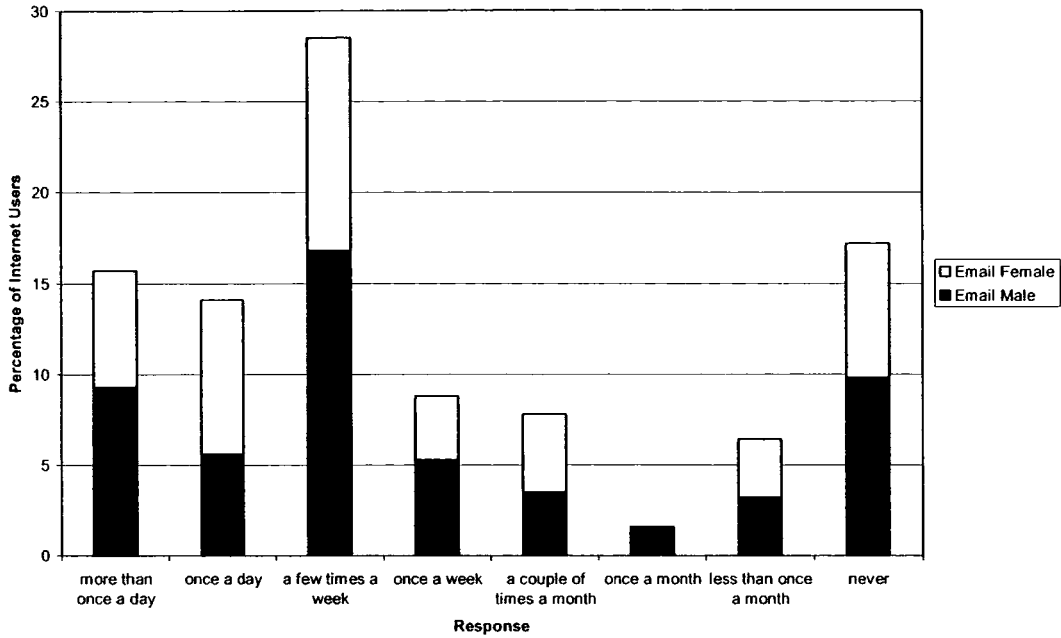
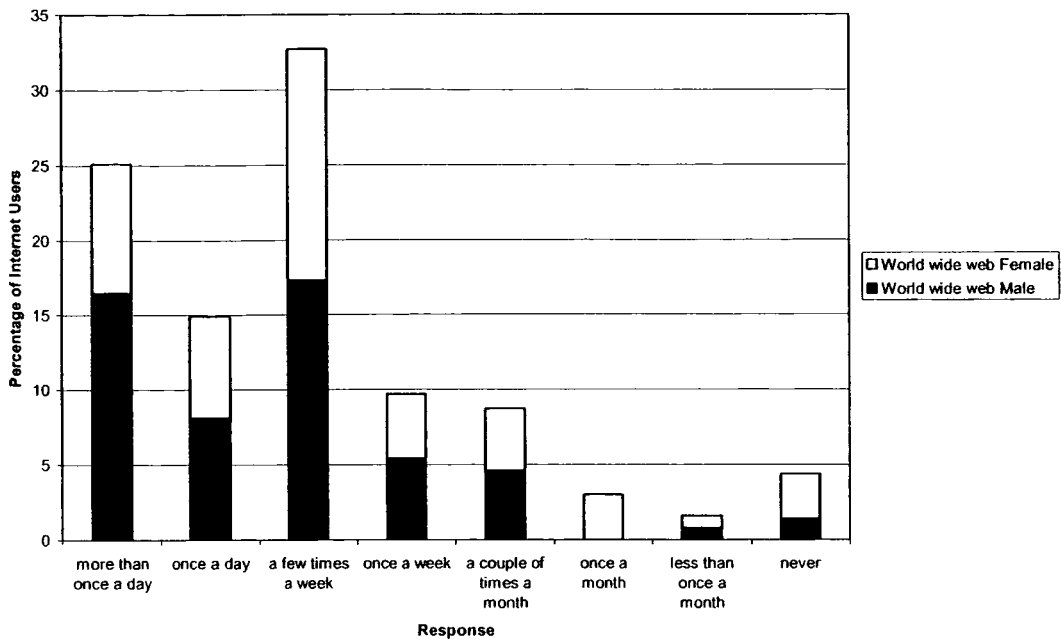


Figure 17b: How often do you use the Internet for the world-wide web?



**Do you have a personal email address? Do you have a web-page?**

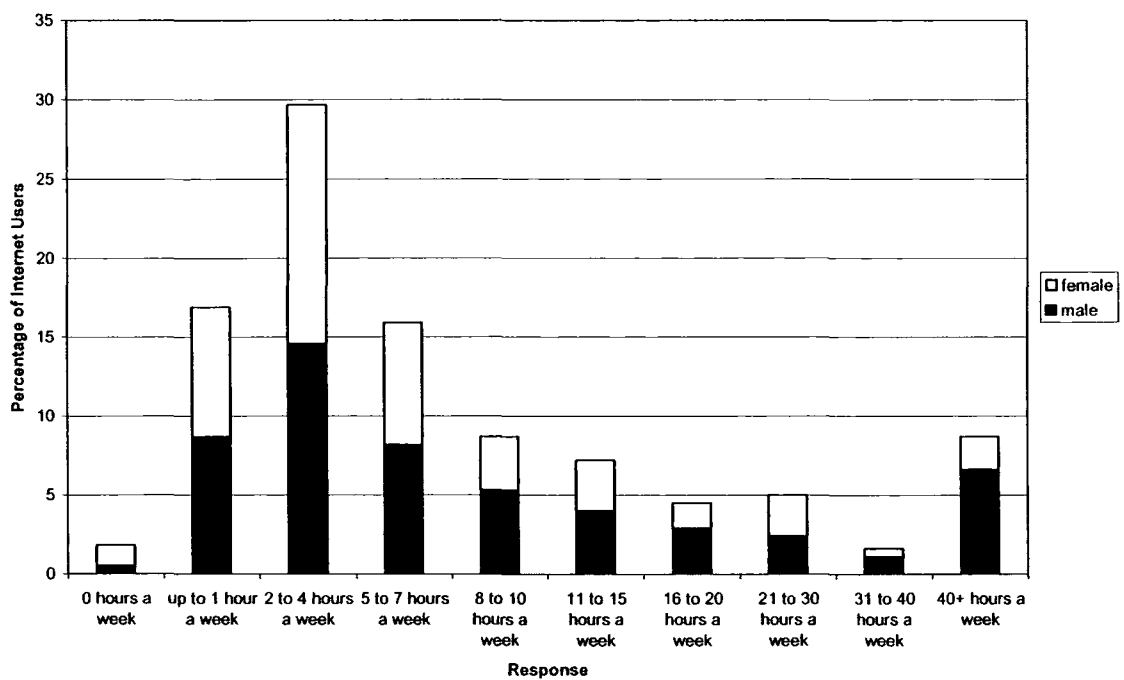
79.7 percent of Internet users stated that they had a personal email address and 21.6 percent stated that they had a personal web page. There was no association with gender for these variables. These results are slightly at odds with those found in the paper survey in which males indicated that they had a personal email address more often than females, and males stated that they had their own webpage more often than females.

**For how many hours a week do you use the Internet?**

Figure 18 shows that as in the paper survey, the modal response to this question was '2 to 4 hours' for both males and females. This response was given by 29.7 percent of Internet users. There was no significant difference between respondents in the online and paper surveys in the amount of time that they stated they spent using the Internet.

Males stated that they used the Internet for more hours per week than females in the present survey ( $U=15265$ ,  $p<0.05$ ). This gender difference is in the same direction as in the paper survey. Interestingly, a greater proportion of participants in the online survey than in the paper survey claimed to use the Internet for more than 40 hours per week (8.7 percent as opposed to 4.8 percent).

Figure 18: For how many hours a week do you use the Internet?



**For what purposes do you use the Internet?**

For the online survey, four purposes of Internet use that had not been included in the paper survey, but whose popularity had been noted when data were collected, were added to the options for this question on the online version. These were 'instant messaging', 'using auction sites', 'using discussion forums/newsgroups/usenet' and 'playing games'. Unfortunately, it is not possible to include data from another purpose of Internet use that had

been included on the paper questionnaire, 'downloading software, including games', because of a technical error when collecting data.

For this question, participants could select as many activities from the list as were relevant to them. The mean number of purposes for which males stated that they used the Internet was 6.8 and for females was 6.1. This difference was significant ( $t=2.060$ ,  $df=222$ ,  $p<.05$ ).

In comparison with the paper survey, it was found that for the online survey, greater proportions of participants used the Internet for all of the activities described on both versions of the questionnaire. It was also found that 'playing games', which was not an option on the paper survey, was the most popular of the Internet activities selected on the online survey. Figure 19 shows that 89.0 percent of the participants stated that they used the Internet for this purpose. In addition, the order of popularity for some of the other purposes of Internet use was different for the online survey than for the paper survey. For example, 'general browsing or surfing' was more popular than 'playing or downloading music' and 'using chat rooms or sites' was more popular than 'finding information about goods/services' on the online questionnaire, whereas these purposes were ranked the opposite way round on the paper version.

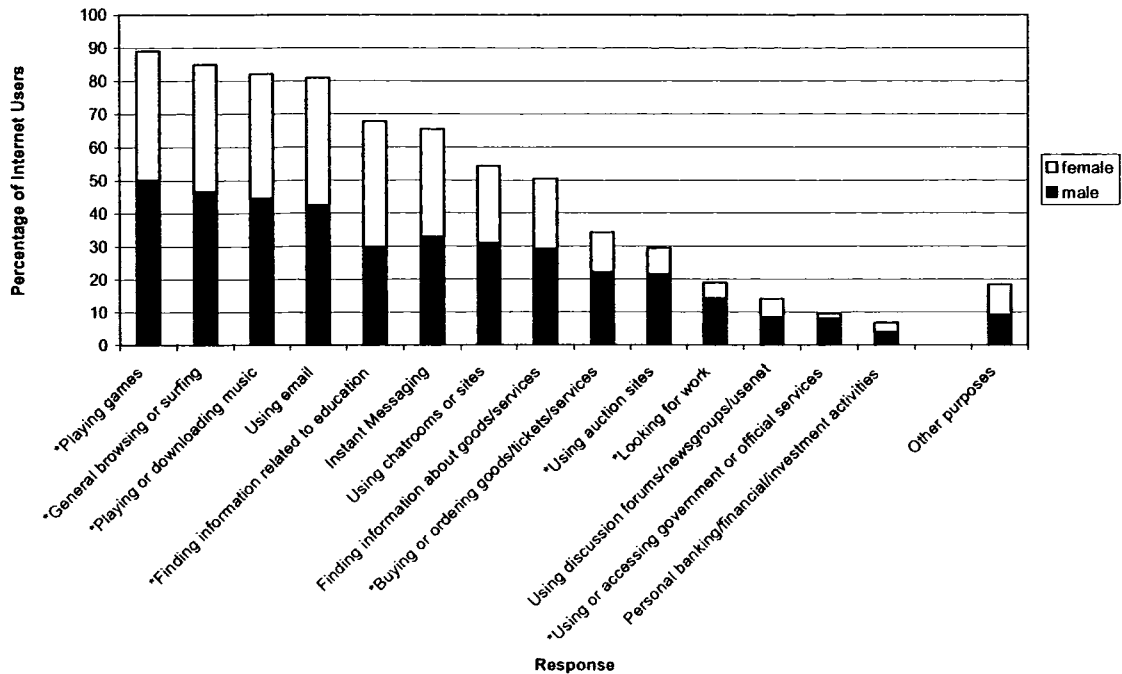
As with the paper survey, there was something of a reduction between the most popular purposes of Internet use, 'playing games', 'general browsing or surfing', 'playing or downloading music', and 'using email' and the next most popular use which was 'finding information related to education'. However, the difference was not as large with the online questionnaire as with the paper version.

There were also some significant associations between gender and individual purposes of Internet use for the online survey. As in the paper version, boys stated more often than girls that they used the Internet for: playing or downloading music ( $\chi^2=4.454$ ,  $df=1$ ,  $p<.05$ ), general browsing or surfing ( $\chi^2=4.267$ ,  $df=1$ ,  $p<.05$ ), buying or ordering goods/tickets/services ( $\chi^2=8.772$ ,  $df=1$ ,  $p<.005$ ) and using or accessing government or official services ( $\chi^2=12.100$ ,  $df=1$ ,  $p<.005$ ). However, unlike in the paper survey males were also more likely than females to state that they used the Internet for looking for work ( $\chi^2=13.624$ ,  $df=1$ ,  $p<.0005$ ), playing games ( $\chi^2=11.006$ ,  $df=1$ ,  $p<.005$ ) and using auction sites ( $\chi^2=17.909$ ,  $df=1$ ,  $p<.0005$ ). Males were no more likely than females to indicate that they used the Internet for finding out information about goods and services as had been found in the paper survey.

With regard to gender differences in the opposite direction, girls were more likely than boys to say that they used the Internet for finding information related to education ( $\chi^2=10.627$ ,  $df=1$ ,  $p<.005$ ) in the online survey. This gender difference was also found in the paper survey. However, unlike in the paper survey, females were no more likely than males to state that they used the Internet for email or for using chat rooms or sites.

There were no gender differences in use of the Internet for: 'instant messaging', 'using discussion forums/newsgroups/usenet', 'personal banking/financial/investment activities' and 'other purposes'.

Figure 19: For what purposes do you use the Internet?



### How do you find out about new web-sites/web pages?

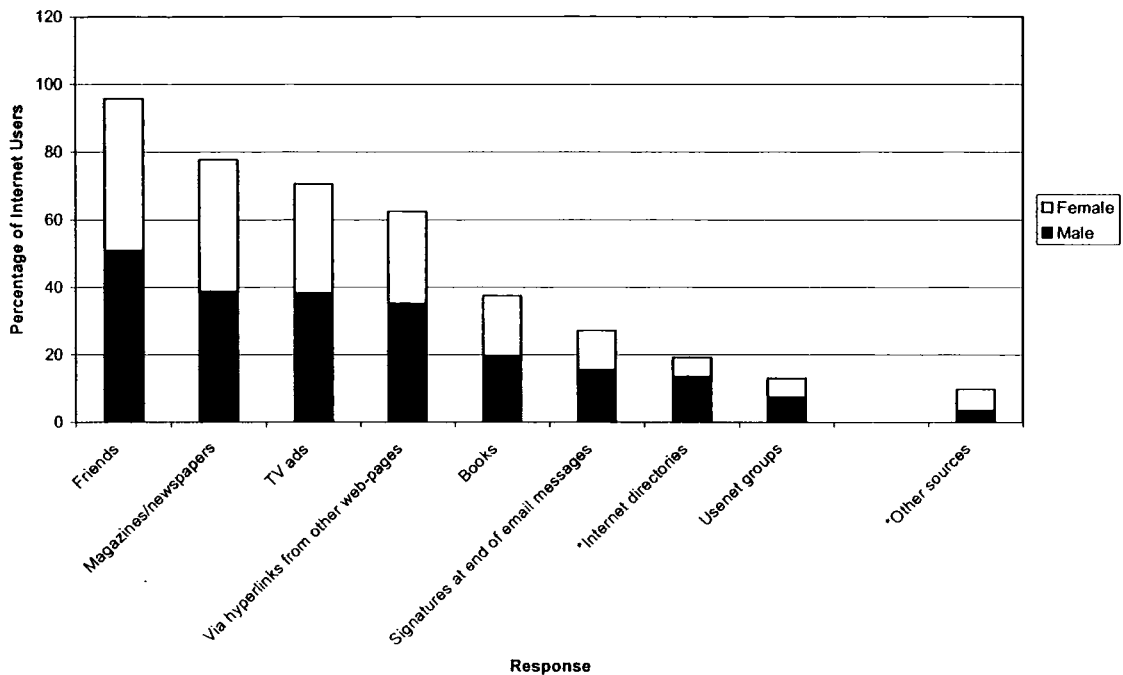
A technical problem meant that data for one of the options for this question was not collected. This was 'from Internet search engines'.

Figure 20 shows that the order of popularity of methods for finding out about new websites or web-pages was the same for the online survey as for the paper survey. Again, the most popular method was 'from friends' with 95.7 percent of Internet users stating that they used this method. This was rather more than in the paper survey (87.3 percent). In fact, all of the methods of finding out about new web-sites and web pages were endorsed by a greater proportion of participants in the online survey.

As in the paper survey, the results for the online version found boys stating more often than girls that they used Internet directories to find out about new web pages and websites ( $\chi^2=8.350$ ,  $df=1$ ,  $p<.005$ ). It was also the

case that girls stated they used 'other sources' more often than boys ( $\chi^2=4.534$ ,  $df=1$ ,  $p<.05$ ). However, there were no other gender differences in methods of finding out about new websites and web-pages for the online survey.

Figure 20: From where do you find out about new web-sites/web-pages?



**At which locations have you accessed the Internet?**

All of the locations of Internet use were endorsed by a greater proportion of Internet users in the online survey than in the paper survey. Unlike in the paper survey in which the most popular location was 'own home', the most popular location of Internet use for the online sample was 'school/college/uni or other educational institution.' Figure 21 shows that 97.0 percent of the Internet users who completed the online survey stated that they accessed the Internet at this location compared to only 55.3 percent in the paper survey.

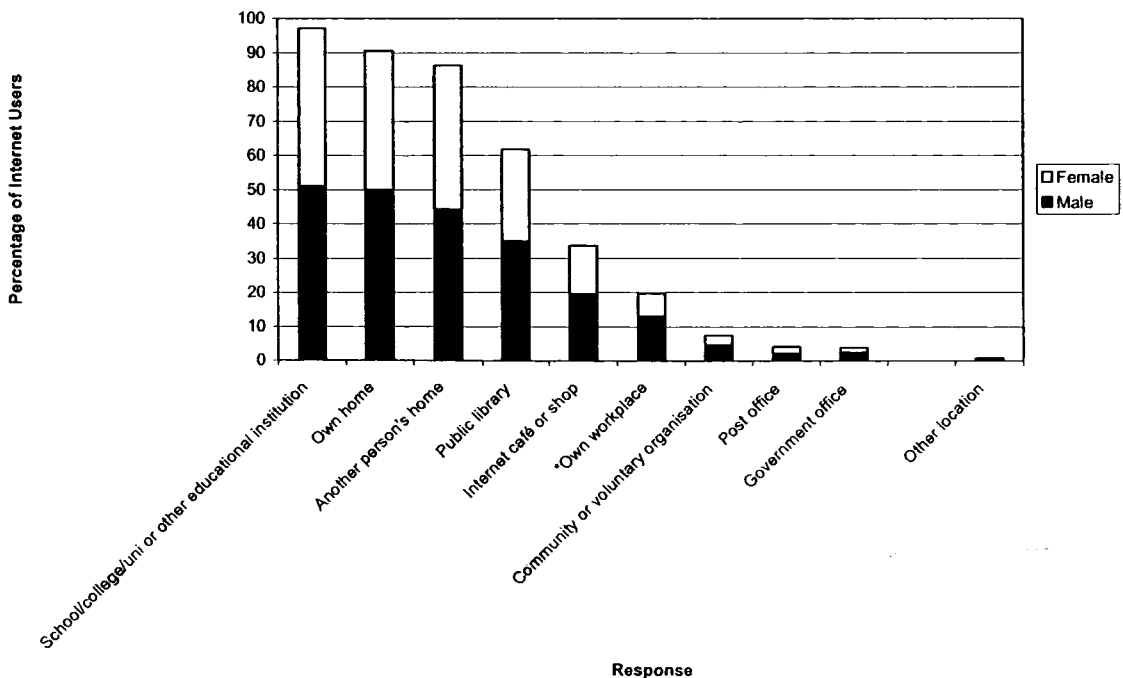
However, this is unsurprising because most of the online respondents would have completed the questionnaire at school.

Apart from this result, the most popular location of Internet use, as in the paper survey, was 'own home'. 90.5 percent of Internet users stated that they had used the Internet at this location. This was about the same proportion who gave this response in the online survey.

The mean number of locations at which participants stated that they accessed the Internet was 3.7. There was no difference between males and females for this result. This number was significantly higher than that found in the paper survey ( $t=13.476$ ,  $df=1340$ ,  $p<.0005$ ).

As in the paper survey, boys were more likely than girls to say that they used the Internet at their 'own workplace' ( $\chi^2=5.187$ ,  $df=1$ ,  $p<.05$ ). However, unlike in the paper survey, this was the only significant gender difference.

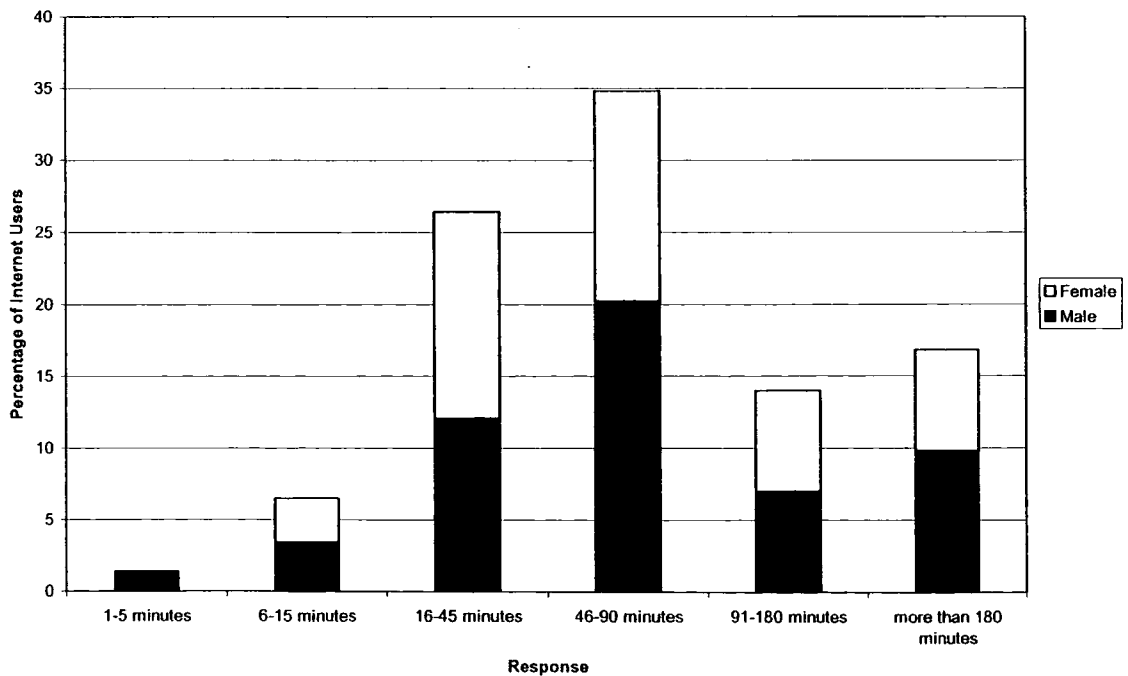
Figure 21: At which of the following locations have you accessed the Internet?



## How long does your typical Internet session last?

As in the paper survey, Figure 22 shows that the modal stated duration of participants' Internet sessions was 46-90 minutes in the online survey. This response was given by virtually the same proportion of participants (34.8 percent as opposed to 34.5 percent). Interestingly, even more Internet users in the online survey than in the paper survey stated that their typical Internet session lasted more than 180 minutes (16.8 percent as opposed to 12.4 percent). Unlike in the paper survey, males in the online survey did not indicate that their Internet sessions lasted any longer than those of females. Likewise, there was also no significant difference in the results for this question between participants in the online and paper surveys.

Figure 22: How long does your typical Internet session last?



### **How often do you find good or helpful web sites?**

Figure 23a shows that as in the paper survey, the modal response given to the question, 'how often do you find good or helpful websites?' was 'sometimes'. The proportion of participants (40.2 percent) who gave this response in the online survey was almost exactly the same as the proportion who gave it in the paper survey (40.3 percent). In addition, there was no significant difference overall between the respondents who completed the online and paper surveys in terms of how often they stated that they found good or helpful websites.

Unlike in the paper survey, there was a significant difference between the genders in how often they stated that they found good or helpful websites: males stated that they found them more often than females ( $U=13771.500$ ,  $p<.05$ ).

### **How often do you feel confused when you use the Internet to find information?**

Figure 23b shows that the modal category for responses to this question was 'sometimes' (25.6 percent), whereas in the paper survey it was 'rarely'. In fact, overall, those in the online sample stated that they more often felt confused by the Internet than those who completed the paper version ( $U=196523.000$ ,  $p<.05$ ). Figure 23b also shows that only 9.1 percent of participants in the online survey 'frequently' felt confused by the Internet. This was almost exactly the same proportion as in the paper survey (9.0 percent).

If the genders are considered individually it can be seen that males' modal response in answer to this question was 'almost never', whereas for females it was 'sometimes'. As in the paper survey, there was also a significant overall difference between the genders in terms of how often they stated that they felt confused when using the Internet, with females stating that they felt more often confused than males ( $U=13160.500, p<.001$ ).

Figure 23a: How often do you find good or helpful websites?

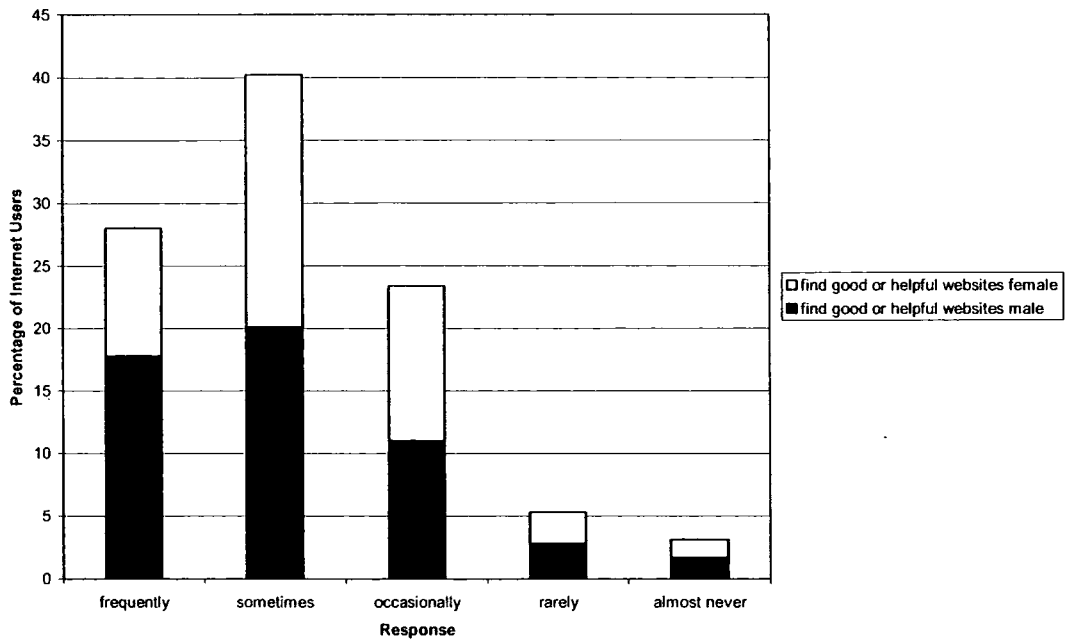
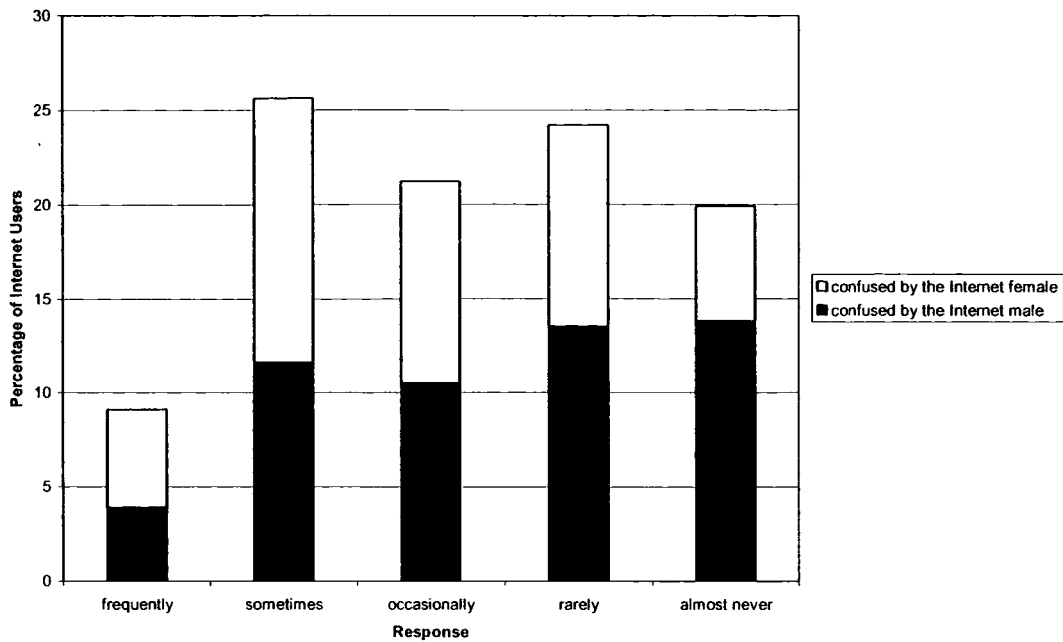


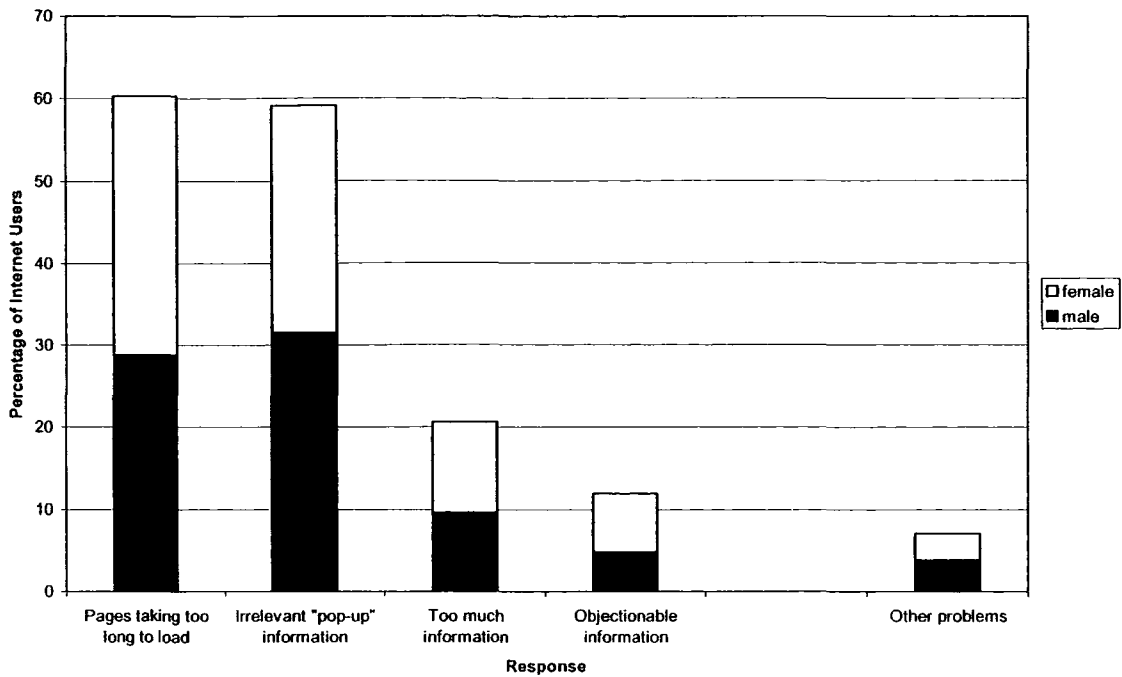
Figure 23b: How often do you feel confused when you use the Internet to find information?



### What do you consider are the biggest problems with the Internet?

Due to a technical problem, data for one option, 'poor-quality information' could not be collected for this question. Otherwise, the order of popularity of the responses for the online version of the questionnaire was the same as the order for the paper questionnaire. This is illustrated by Figure 24. The mean number of problems that respondents endorsed was 1.6 and there was no significant difference between the genders for this result.

Figure 24: What do you consider are the biggest problems with the Internet?

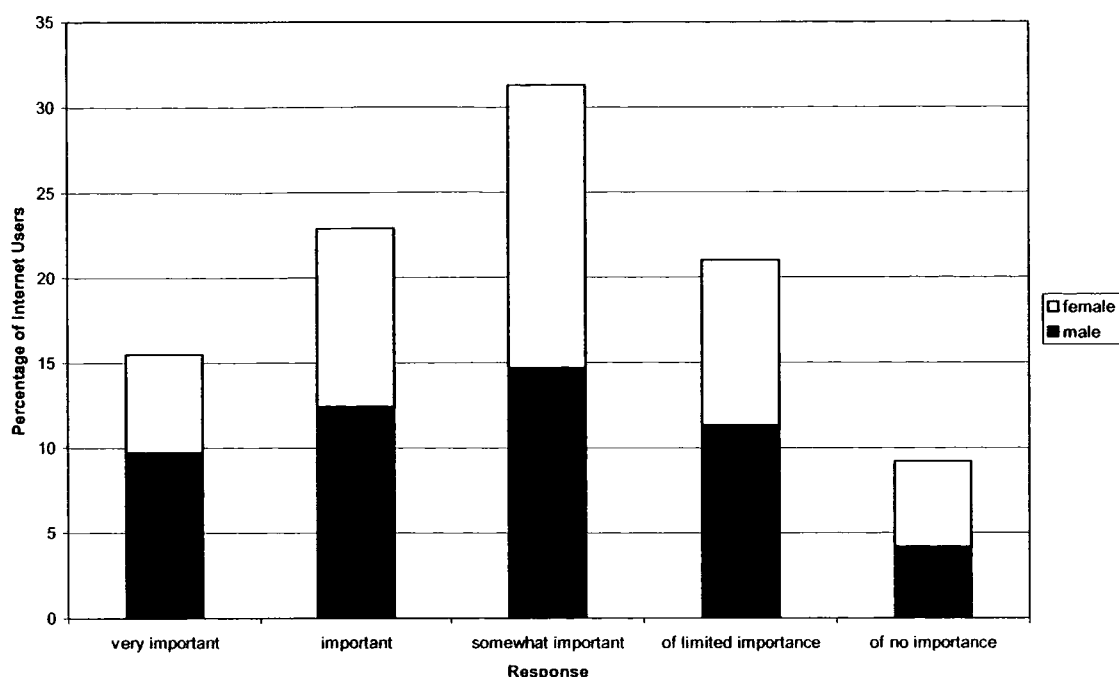


### How important do you consider the Internet to be in your life?

As in the paper survey, Figure 25 shows that most participants considered the Internet to be 'somewhat' important in their lives (31.3 percent). Again, this was almost the same proportion as in the paper survey (31.5 percent). Also, as in the paper survey, notable numbers of participants considered the Internet more or less important than this.

As in the paper survey, there were no gender differences in the results for this question amongst those who took the survey online, but the online sample did indicate that they considered the Internet more important than the group who answered the paper survey ( $U=190093.500, p<.05$ ).

Figure 25: How important do you feel the Internet is in your life?

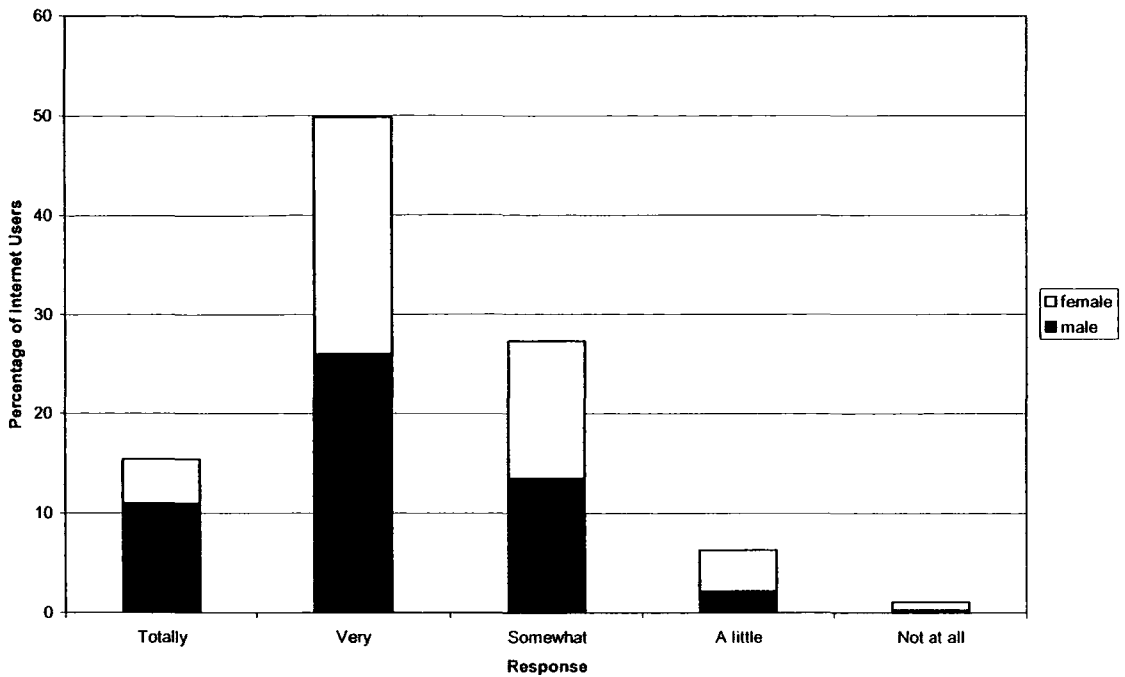


### How satisfied are you with the Internet?

Figure 26 shows that 92.5 percent of Internet-using participants in the online survey stated that they were 'totally', 'very' or 'somewhat' satisfied with the Internet. This is a similar proportion to that which resulted from the paper survey (89.7 percent). In addition, as in the paper survey the modal response to this question was 'very', with 49.8 percent of participants giving this response. Only 7.4 percent of Internet users stated that they were either 'a little' or 'not at all' satisfied with the Internet, which is similar to the 10.3 percent who gave this response in the paper survey.

Males indicated that they were more satisfied with the Internet than females in the online survey ( $U=13533.500$ ,  $p<0.005$ ). This was not the case for the paper survey.

Figure 26: How satisfied are you with the Internet?



## Mobile phone related questions

### Do you own a mobile phone?

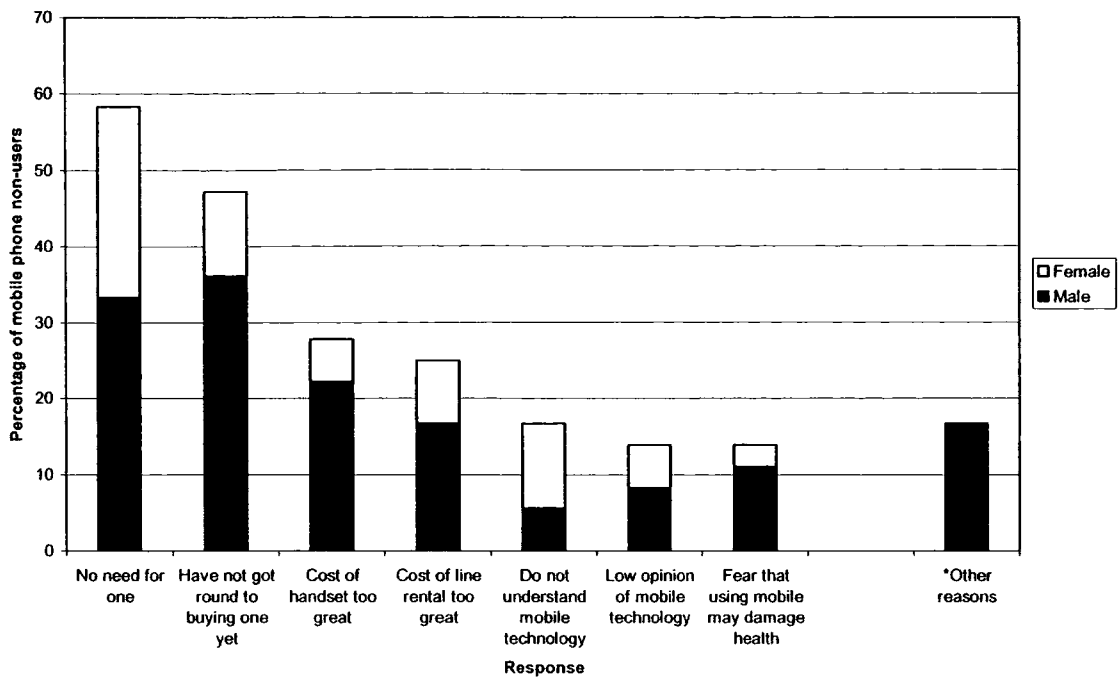
87.6 percent of the sample answered this question and of these, 90.6 percent stated that they owned a mobile phone. Although the proportion of respondents who stated that they owned a mobile phone was slightly higher in the online survey than in the paper version for both sexes, the gender difference in mobile phone ownership was in the same direction. That is, in both the online and paper versions of the questionnaire, more females (94.1 percent) than males (87.6 percent) stated that they owned a mobile phone ( $\chi^2=4.948$ ,  $df=1$ ,  $p<.05$ ).

### **What are your reasons for not owning a mobile phone?**

Participants who did not own a mobile phone were asked why this was the case. More than one response to this question could be selected. All of the responses were endorsed by a greater proportion of mobile phone non-users in the online survey than in the paper survey. However, Figure 27 shows that the first four reasons for non-ownership of a mobile phone came in the same order as in the paper survey: 'no need for one', 'have not got round to buying one yet', 'cost of handset too great' and 'cost of line rental too great.' 'Do not understand mobile technology' came higher in the order of reasons for not owning a mobile phone in the online survey than in the paper survey, coming third from bottom rather than bottom.

There were no gender differences in any of the reasons given for not owning a mobile phone. In many cases this may have been because so few respondents to the questionnaire did not own a mobile phone that any gender differences did not attain significance.

Figure 27: What are your reasons for not owning a mobile phone?



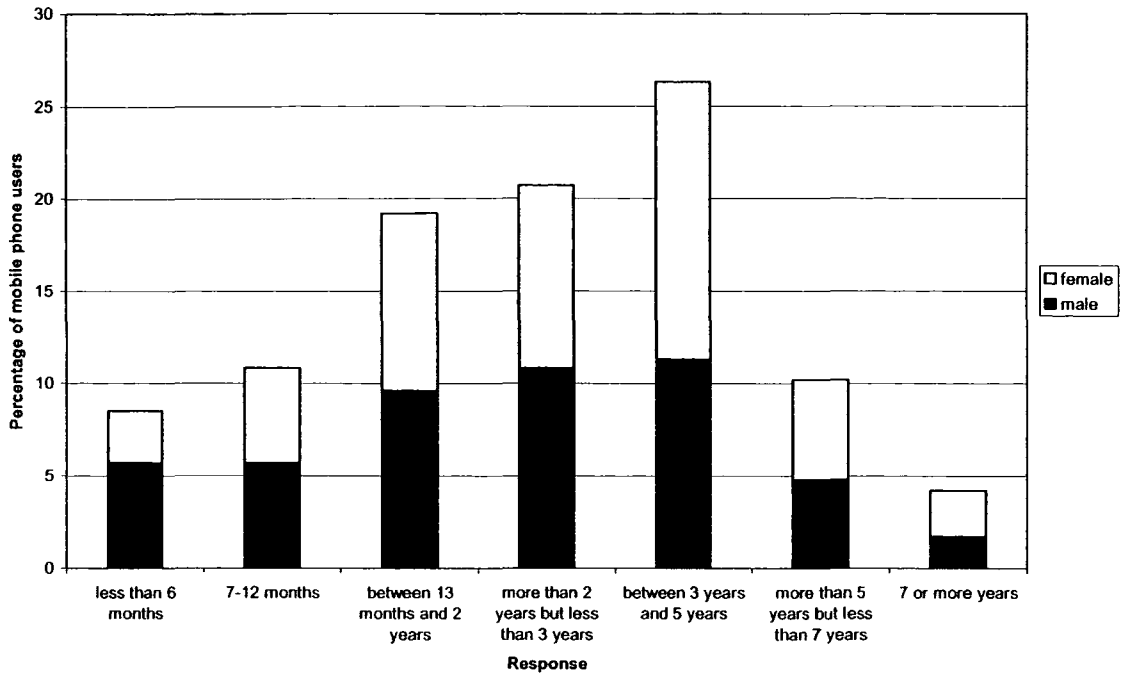
Children who did own a mobile phone were then asked a number of questions concerning their use. These included the following:

**For how long have you owned a mobile phone?**

Figure 28 shows that the modal length of time for which participants stated that they had owned a mobile phone was longer in the online survey than in the paper survey. This was ‘between 3 and 5 years’ in the online version as opposed to ‘between 13 months and 2 years’ in the paper version.

Unlike in the paper survey in which there were no gender differences in the length of time for which participants stated that they had owned a mobile phone, it was found that females stated that they had owned a mobile phone for longer than males in the online survey ( $U=13723.500, p<.05$ ).

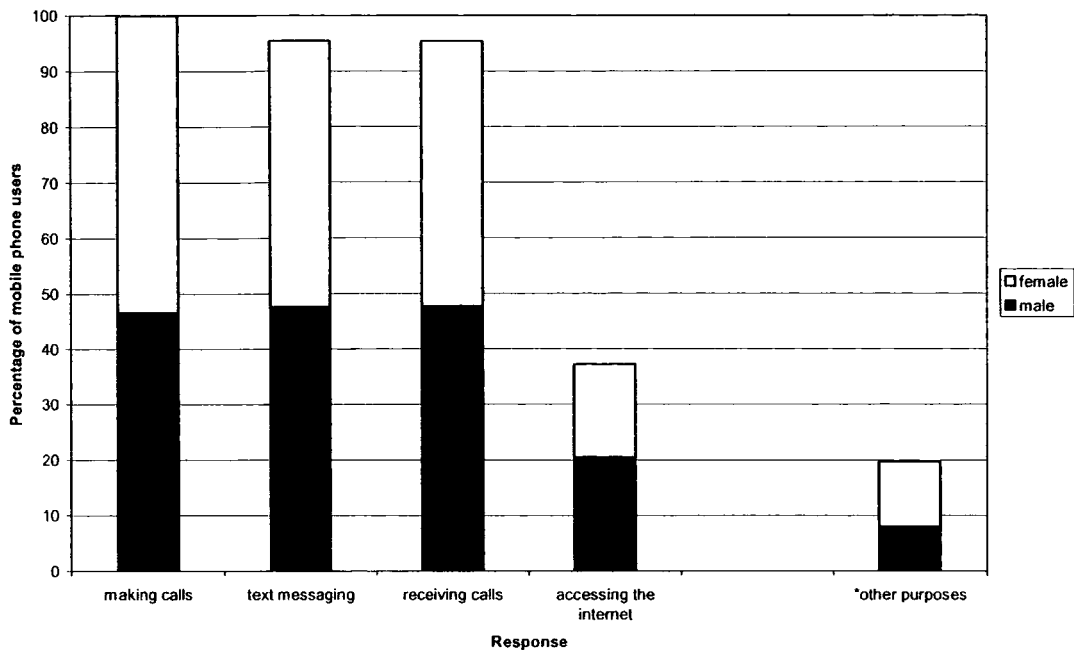
Figure 28: For how long have you owned a mobile phone?



**For what purposes do you use your mobile phone?**

Figure 29 shows that the order of popularity of purposes of mobile phone use was the same in the online survey as in the paper survey. However, the proportions of mobile phone users who stated that they used their phones for the various purposes described were higher for all purposes in the online version than the paper version. There was only one gender difference in the results obtained in the online survey for this question. This was for 'other purposes', and females were more likely to give this response than males ( $\chi^2=4.671$ ,  $df=1$ , two-tailed  $p<.05$ ).

Figure 29: For which purposes do you use your mobile phone?



### How often do you use your mobile phone for these purposes?

The modal responses to all questions concerning frequencies of use of mobile phones for various purposes were the same in the online questionnaire as in the paper version. Figure 30a 30b and 30c shows that these were 'a few a week but less than one a day' for making phone calls, '2 to 5 a day' for text messaging, and 'never' for accessing the Internet.

However, unlike in the paper survey, there were no gender differences in any of the responses. In the paper version females had stated that they more frequently sent text messages than males and males had stated that they more frequently used their phone for the Internet than females

There were significant differences between the online sample of participants and those who took part in the paper survey in terms of how frequently they stated that they used their mobile phones for making calls ( $U=139177.000$ ,  $p<.0005$ ), texting ( $U=122523.000$ ,  $p<.0005$ ) and accessing

the Internet (U=50981.000, p< .0005). In all three cases, those who participated in the online questionnaire stated that they used their mobile phones more often for these purposes.

Figure 30a: How often do you use your mobile phone for the following purpose?

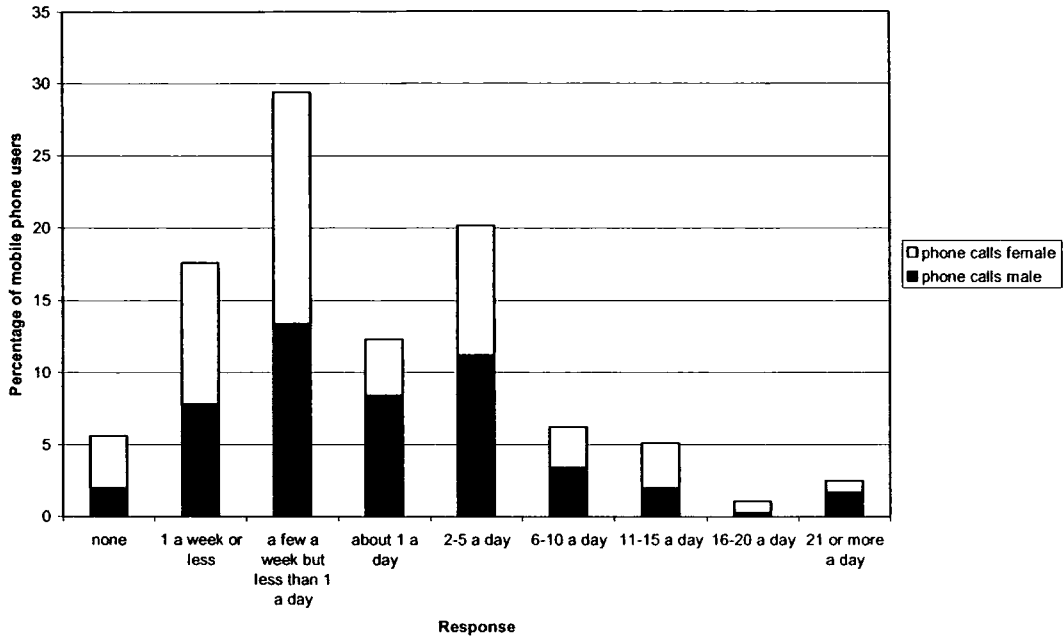


Figure 30b: How often do you use your mobile phone for the following purpose?

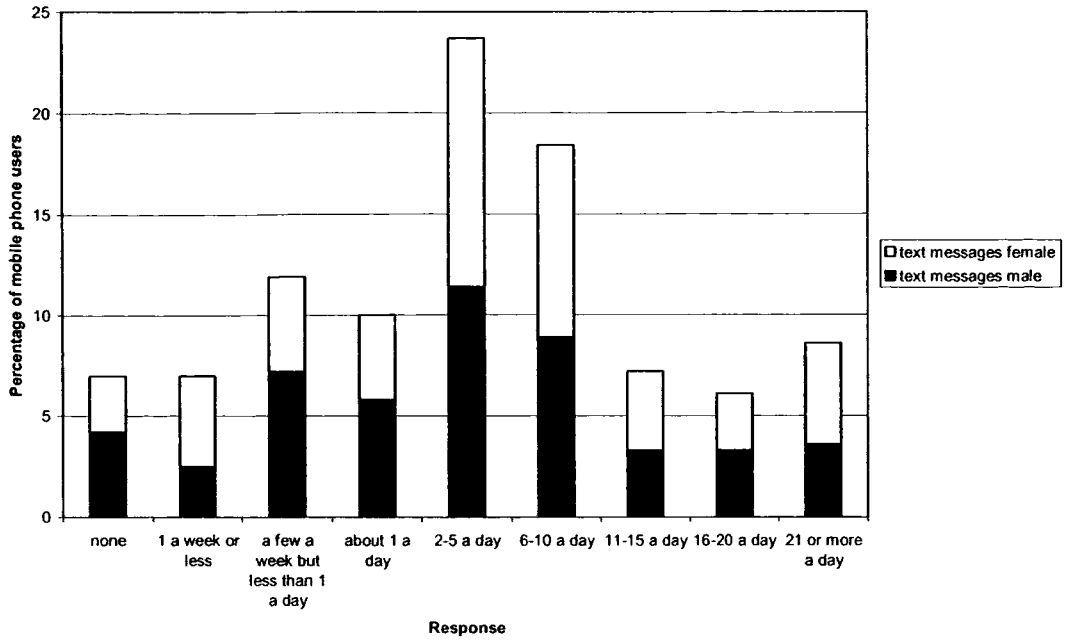
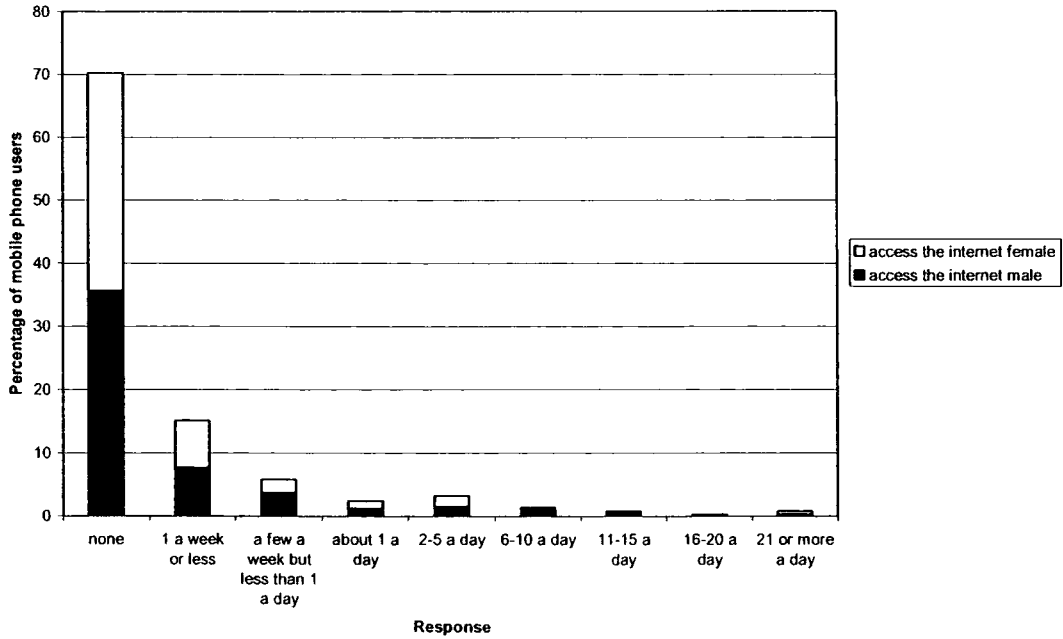


Figure 30c: How often do you use your mobile phone for the following purpose?



## **Discussion**

First, this section will compare the results from the online and paper surveys in general. Then, it will discuss the results in relation to the advantages and disadvantages of online data collection. Finally, gender differences in the results from the online survey will be considered, and compared with those found in the paper survey.

### **Comparison of results from online and paper surveys**

More respondents indicated that they were Internet users in the online survey (94.1 percent) than in the paper survey (83.0 percent). However, as has been stated, this was probably due to the nature of the medium via which the online sample took the survey. Therefore, the results from the paper survey are probably more accurate for this question. One can conclude that over four-fifths of young people of secondary school age may consider themselves Internet users. However, this proportion may have risen since the surveys were conducted.

Non-users of the Internet in the online survey were likely to suggest that they were either not interested in using the Internet, or did not have the confidence or skills to use it, as reasons for their lack of use. Non-users in the paper survey were most likely to suggest that their non-use was due to a lack of access to facilities, although a lack of interest was also relevant. Again, as has been discussed, the results from the paper survey may be more accurate for this question because non-users could have been under-represented in the online sample, resulting in biased responses to this question. It can be

concluded that a lack of access to facilities and a lack of interest are the most likely reasons for young people's non-use of the Internet.

The proportion of Internet users who stated that they had a computer at home was 90.0 percent in the online survey and 94.7 percent in the paper survey. Therefore, it is possible that around 9 out of 10 children who consider themselves Internet users have a computer at home. The paper and online surveys also indicated that perhaps around three-quarters of children who do not consider themselves Internet users have a computer at home. The difference in levels of computer ownership between users and non-users of the Internet supports the idea that a lack of access to facilities may be an important reason for non-use of the Internet by young people.

Both the paper and online surveys suggested that young people most commonly use the Internet for email and the world-wide web a few times a week. The results from the paper and online surveys also suggested that around three-quarters of young Internet users have a personal email address, that perhaps just under one-fifth have a web-page, that children most commonly use the Internet for between 2 and 4 hours a week, and that around 9 out of 10 find out about new web pages and sites from friends (the most popular method). Internet sessions seem to most commonly last for between 46 and 90 minutes, although there may be a proportion (perhaps somewhere around 15 percent) of young Internet users whose typical Internet session lasts for more than 3 hours. The results from both the paper and online surveys also suggested that most young Internet users access the Internet from school, their own home, or another person's home. Public libraries and Internet cafes may also be used by a substantial, but lower,

proportion of young Internet users. Young people on both surveys most commonly indicated that they found good or helpful websites 'sometimes', and did not often feel confused when using the Internet to find information. The most commonly reported problems associated with use of the Internet for both the paper and online surveys was that web pages could take too long to load and irrelevant information sometimes 'popped-up'. Both surveys also indicated that around 9 out of 10 young people are 'totally', 'very' or 'somewhat' satisfied by the Internet.

Data from both the online survey and the paper version suggested that the most popular uses of the Internet amongst young people are playing or downloading music, general browsing or surfing and using email. Playing games was also indicated to be the most popular use of the Internet by the online survey. The popularity of purposes of Internet use by young people may fluctuate with time but the data suggest that between 50 and 90 percent of young Internet users engage in these activities. Use of the Internet to find information related to education may be engaged in by between 25 and 70 percent of young Internet users. Although these figures are not very precise, it can at least be concluded that use of the Internet for educational purposes amongst young people may not be as popular as its use for either communication or entertainment. This supports findings reported by Ebersole (2000), Nachmias et al. (2000) and Kerawalla and Crook (2002).

The data from both the online and paper surveys suggested that around 9 out of 10 young people own a mobile phone. The data from both surveys also indicated that the most common reason for non-ownership of a

mobile phone was that there was no need for one, and this reason may apply to around 50 or 60 percent of young non-users of mobile phones.

Data from the online survey suggested that respondents had owned their mobile phones for between 3 and 5 years, whereas this figure was only for between 13 months and 2 years for the paper survey. As the paper survey was conducted between one and two years before the online version, this may suggest that young people now obtain their first mobile phone at a younger age than once was the case.

Both the online and paper surveys suggested that making and receiving calls and text messaging were the most popular uses of mobile phones amongst young people. The data suggested that making and receiving calls was carried out by between 80 and 100 percent of young mobile phone users and that text messaging was carried out by around 90 to 95 percent of young mobile phone users. Accessing the Internet using a mobile phone may be carried out by between a tenth and a third of young mobile phone users. Both the online and paper surveys suggested that text messaging is carried out more frequently than making phone calls ('2 to 5 times a day' as opposed to 'a few times a week but less than once a day'), and that accessing the Internet is hardly ever carried out.

### **Advantages and disadvantages of online data collection**

Kraut et al. (2004) described some of the benefits of online data collection. These included the fact that online questionnaires can be less error prone as they do not require human transcription. Furthermore, the fact that online surveys are automated means that the researcher does not need to be

present to supervise data collection. In relation to the present study, this meant that it was possible to easily collect data from individuals in educational institutions far outside the distance to which the researcher could have travelled, without the administrative issues that could arise from a postal survey. This added to the quality of the results in terms of population validity. In addition, online data collection is practical because it means that data can be gathered constantly, 24 hours a day (Reips, 2000). Furthermore, time spent in data entry is greatly reduced.

However, there was a disadvantage to collecting data online for the present survey. This was the fact that it is likely that data would have contained a disproportionately low number of Internet non-users by virtue of the fact that schools that could easily make the Internet available to their pupils would have been more likely to take part in the online survey. Nevertheless, it should be noted that teachers at the schools which participated usually told the researcher that they would ask their pupils to complete the questionnaire during school hours in the classroom. This meant that even some individuals who generally considered themselves non-users of the Internet responded to the questionnaire. Another issue in terms of population validity is that if schools that could afford their pupils greatest access to the Internet were more likely to participate in the online survey, this could mean that the population validity of the results was low in terms of socioeconomics.

Gosling et al. (2004) have also discussed other issues associated with the population validity of online surveys. For example, they argued that one preconception about Internet-based surveys is that these will be completed

more often by white males than other groups. However, the proportion of males and females who answered both the online and paper versions of the survey described in this chapter were roughly equal. Furthermore, both samples seemed to be reasonably representative of the UK population in terms of ethnicity, and, in fact, the proportion of individuals who indicated that they were white was rather lower than the national average for the online survey.

One must also consider the motivation of those taking part in surveys of any type, as this can affect results in terms of generalisability. Buchanan and Smith (1999) indicated that results from studies in which students are coerced to participate can differ from those where volunteers are used. It is highly likely that respondents to the present survey and the paper survey reported in Chapter 2, would have had some pressure placed on them to participate by their teachers. However, Buchanan and Smith argue that the results of studies using coerced students may actually be more representative of the population than some volunteer groups under certain circumstances. It is considered that this may certainly be the case with the current survey, because the recruitment strategy used meant that a great variety of young people participated, rather than just those who had some special motivation to answer a questionnaire about Internet and mobile phone use.

In regard to other possible disadvantages of online data collection, Kraut et al. (2004) and Buchanan and Smith (1999) argued that the researcher has no control over the conditions under which a questionnaire is completed when it is administered online. Buchanan and Smith also suggested that the psychological distance between respondents and the

administrator can negatively impact results. Similarly, Gosling et al. (2004) stated that another issue related to the collection of data online is that participants may not be sufficiently motivated to take the study seriously. In such a situation, the researcher would remain completely unaware of participants' lack of interest, and also of how factors like fatigue or mood state were affecting the behaviour of the sample. This could lead to individuals who participate either superficially or even malevolently when providing data. Indeed, this was probably something of an issue in the present survey in which a proportion of respondents seemed to have missed out parts of the questionnaire. For example, of the two questions that everyone could have answered, 'Do you use the Internet?' and 'Do you use a mobile phone?', 99.3 percent and 96.0 percent of participants respectively provided responses on the paper survey, whereas the corresponding figures were only 93.3 percent and 87.6 percent for the online survey. The figures may be lower for the online survey, because participants could have found it easier to submit a partly answered questionnaire without fear of further inquiry from the administrator. In addition, it may be the case that the figure corresponding to the question about mobile phone use is particularly low, because this question came much later on in the questionnaire than that concerning the Internet, by which time participants may have become bored or fatigued with providing responses.

Another disadvantage of online data collection as described by Buchanan and Smith (1999) and Birnbaum (2004) is that it is possible for one person to complete the same test more than once, answering in different ways. However, this may more often be the case where respondents are

completing a psychological assessment, and wish to see how they would have scored if they had provided different answers. This was not the type of questionnaire that was used for this study. There was no follow-up data returned to the respondent and so it is hoped that there would not have been an incentive for multiple submissions.

### **Reliability of responses**

Whether participants in electronic surveys are more or less honest with their responses than those in surveys conducted via more traditional methods has been debated in the psychological literature. Feinstein (1986), Kiesler and Sproull (1986) and Martin and Nagao (1989) compared surveys conducted on computers (although not via the Internet) with those on paper and found that the former often contained more honest responses.

Furthermore, of even more relevance to the present survey is the fact that Thach (1995), Furlong (1997), Joinson (1999) and Shields (2003) all reported that those answering online surveys either via email or the Internet generally are likely to be more honest with their answers than those answering paper surveys, especially when questions are of a socially sensitive nature. In this regard, Joinson (1999) stated that disinhibition when using the Internet, caused by anonymity, increased private self-awareness and decreased public self-awareness could raise self-disclosure. (The roles of self-awareness on disinhibition when using the Internet will be discussed in more detail later in this thesis).

However, in contradiction to these findings, a study of 58 graduate students at a large university in the south-eastern United States by Hancock

and Flowers (2003) found that students who participated in a survey about their computer skills both online and on paper, exhibited higher levels of social desirability responding when answering questions in the former rather than the latter situation. However, the effect size was only small. This result was explained in terms of a 'big brother syndrome' whereby many Internet users worry that data collected via the Internet cannot always be kept confidential. That is, some Internet users fear a threat of intrusion when they submit information online, which is doubtlessly amplified by thoughts of hackers and fraudsters that appear frequently in stories from the media. Hancock and Flowers argued that when their participants took the survey online, they might have felt that their responses could be traced back to them, despite being told that this was not the case. This, they argued, may have led to them feeling a need to present themselves in a flattering light.

To return to the current study, there may be some evidence for more social desirability responding from participants who took the survey online than from those who took it on paper. For example, of those who described themselves as Internet users, those from the online survey significantly ( $p < .05$ ) more often claimed that they used the Internet for every single purpose of use which was described in both questionnaires, were more likely to state that they used each of the methods of finding out about new web-sites and web pages, claimed that they used the Internet at a greater number of locations, and were more likely to state that they used the Internet at each of the locations described. Furthermore, those who participated in the online survey stated that they used the Internet more frequently for email and the worldwide web than those in the paper survey, and indicated that they

considered the Internet to be more important to their lives. (It was also the case that a greater proportion of those surveyed online claimed to be Internet users from the outset of the questionnaire, but it cannot be argued that this is likely to be due to social desirability responding, because it is more likely that those in the online survey would consider themselves Internet users by virtue of the fact that they were taking the survey itself online). There was a numerical, but not a significant difference in whether participants from the online and paper surveys stated that they had an email address and web page, although the significance levels, both at  $p < .10$  could be said to be approaching significance.

In addition, in regard to mobile-phone related questions, those who completed the survey online were significantly ( $p < .05$ ) more likely than those who completed the survey on paper to state that they owned a mobile phone, were more likely to indicate that they had owned a mobile phone for longer than the participants in the paper survey, were more likely to say that they used their mobile phone for making and receiving calls, text messaging and using the Internet, and were more likely to indicate that they used their phones for these purposes more frequently.

It is also the case that questions in which there was no statistical difference between the responses provided by the online and paper survey samples, tended to be ones for which it was not especially socially desirable to provide any particular answer. For example: 'how many hours a week do you use the Internet?', 'how long is your typical Internet session?', 'how often do you find good or helpful websites?' and 'how satisfied are you with the Internet?' Likewise, the results for the options associated with the question,

'what do you consider are the biggest problems with the Internet?' varied in terms of whether a greater proportion of those in the online or paper survey endorsed them and this was also likely to be because none of the options held any special relevance to social desirability.

There was one question where one might have expected different results from the online sample if participants in this group were, in fact, producing socially desirable responses. This was for the question 'how often do you feel confused when you use the Internet to find information?' The online sample stated that they were confused more often than those who took part in the paper survey. This seems inconsistent if one supposes that the online sample was producing more socially desirable responses than that involved with the paper survey, as to be confused by the Internet could be viewed as a personal shortcoming. However, an explanation for this result could be that those in the online sample did not mind saying that they were confused by the Internet because it is commonly accepted that the amount of information present on it is bewildering to anyone that uses it. That is, the participants who stated that they were often confused might have felt that they were saying more about the way that the Internet is structured than their own abilities to employ it. It could even be argued that it is socially desirable to say that one finds the Internet confusing because it implies that one is up-to-date enough to understand that computer-aided information seeking is a complex process.

These results could also be viewed from the position that those who answered the online survey were being more honest than those who took the paper survey, rather than providing socially desirable answers. It may be that

the respondents who took the paper survey were actually answering questions in an excessively modest fashion, whereas those who took the online survey disclosed true information about their use of Internet and mobile phone technology. The preponderance of literature about computer-based surveys does seem to suggest that those who complete surveys electronically are more likely to be honest with their answers. Furthermore, Buchanan, Joinson and Ali (2001) (cited in Joinson, in press) found that accentuating the insecure aspects of online data submission to a group of participants who answered an Internet questionnaire did not make them any less likely than a control group to divulge information about themselves, except in relation to two very personal issues, which were masturbation and fantasising about an affair. Therefore, the use of the Internet to collect data may only reduce honesty in situations where extremely sensitive information is being discussed. In this regard, it should be noted that, in relation to increased social desirability responding on their survey, Hancock and Flowers (2003) themselves stated: 'the small effect size associated with this outcome suggests that survey administrators should not be concerned that results attained from the WWW are significantly more biased than results attained by paper-administered surveys' (p.11). (Nonetheless they also indicated that future research should continue to investigate the effects of administering surveys via the Internet).

Of course, it could also be the case that the results from both surveys reasonably accurately represented the samples from which they came. It is the opinion of the author that this is the most likely scenario because the questions asked to the participants were not of a socially sensitive nature, and

so it seems unlikely that the method of data collection would have greatly affected the honesty of responses. That is, the results may only be dissimilar because participants from the online sample genuinely were more proficient at using the Internet and mobile phones than those who took part in the paper survey. This is quite possible because use of the Internet and mobile phones may not have been as popular amongst young people in the Teesside area (who took the paper survey) as amongst those from other locations (who took the online survey). For example, as was noted in Chapter 2, The Family Expenditure Survey (Expenditure and Food Survey from 01/04/01) (cited by Bowman, 2002) stated that only 26 percent of households in the North-East had access to the Internet, compared to a national UK average of nearly 40 percent, between October 2000 and September 2001 (p.3).

## **Gender Differences**

### **Internet Use**

As in the paper survey reported in Chapter 2, there was some evidence in favour of a bias towards male use of and competence with the Internet in the online survey results. In both versions of the questionnaire, males stated that they used the Internet for more hours per week than females and that they used the Internet for the world-wide web more frequently than females. Also as in the paper survey, females in the online survey stated that they were more often confused than males when using the Internet to find information. In addition, two other gender differences that would support the idea of a bias towards male use of and competence with the Internet were found that did not occur in the paper survey. These were that males stated they found good or

helpful websites more often and used the Internet for a greater number of purposes than females.

However, not all of the gender differences in support of a bias towards male use of and competence with the Internet that were found in the paper survey were found in the online survey. For example, there were no differences in whether or not males and females stated that they used the Internet; nor was there a difference in the length of typical Internet sessions, in ownership of an email address or ownership of a web-page. Also, as in the paper survey, there was no difference between males and females in the frequency with which they stated that they used email and in the importance that they attributed to the Internet.

The results from the paper and online surveys both support the idea that there may be something of a male bias towards use of and competence with the Internet, although the individual results from each survey that support this assertion differ slightly in some respects.

The results from the online survey also support the paper survey in indicating that there may be some gender differences in the purposes for which young people use the Internet. In particular, both surveys suggested that boys used the Internet more for playing or downloading music, general browsing or surfing, buying or ordering goods tickets and services and using or accessing government or official services. The online survey also supported the paper version in finding that girls were more likely to use the Internet for educational purposes than boys. As these gender differences were found by both surveys, it might be argued that it is likely that they occur with young people in the UK in general.

## **Mobile phone use**

As in the paper survey, the results from the online survey indicated that there might be some evidence to suggest a gender bias towards female ownership of mobile phones. For example, in the online survey, females (94.1 percent) again stated significantly more often than males (87.6 percent) that they possessed this device. Furthermore, females also indicated that they had owned a mobile phone for longer than males. However, no gender differences in purposes of mobile phone use were found in the online survey, which was not the case in the paper version. For example, gender differences in extent of text messaging and use of phones for the Internet were not reported.

It is possible that although girls are initially more likely to own a mobile phone than boys, once both sexes possess one, the purposes for which they use them and the frequencies with which they do this are broadly similar. This may have been revealed in the online survey but not the paper version because the online survey was conducted over a period of time between a year and two years after the paper survey had ended. In this period of time gender differences in purposes of use of mobile phones may have narrowed.

## **Conclusion**

The data from the paper and online surveys provide a broadly similar picture of young people's use of the Internet and mobile phones, although some differences in the data were found. The results from the online survey provide some support for the theory that there is a gender bias towards male use of and competence with the Internet amongst UK secondary school-aged

children. In addition, there may be some gender differences in the purposes for which young people use the Internet, which have been described. There is also some support from the online survey that girls were more likely to be mobile phone owners than boys. This supports findings from other research (Haste, 2005; Childwise Monitor Survey, Winter 2003-2004). However, unlike in the paper survey, differences between the genders in the purposes for which they use mobile phones, and the frequency with which phones were employed for these purposes, were not found.

There are considerable practical and financial advantages to online data collection. For example, this can allow diverse samples of participants to be recruited for a survey or experiment. However, there are some negative aspects to Internet-based research, such as that it may be difficult to encourage participants to complete questionnaires and other measures thoroughly. Finally, issues associated with reliability of responses should be considered when employing the Internet for research purposes, especially when questions are of a socially sensitive nature.

## **Chapter 4**

### **Validity and Reliability issues associated with Mattick and Clarke's (1998) Social Phobia (SPS) and Social Interaction Anxiety (SIAS) Scales**

Before the correlational study investigating associations between social anxiety disorders and use of the Internet and mobile phones is described in Chapter 6, the present chapter discusses validity and reliability issues associated with Mattick and Clarke's (1998) Social Phobia (SPS) and Social Interaction Anxiety (SIAS) scales. These scales were used to measure social anxiety and social phobia for the correlational study.

#### **Description of the SIAS and SPS**

The SPS consists of 20 questions which assess the fear of being scrutinised during routine activities, and the SIAS consists of 19 questions which assess fears of more general social interaction. The questions comprising the scales can be found in Appendix III.

Mattick and Clarke (1998) define social phobia and social interaction anxiety as two separate conditions, offering similar definitions as those described by Crozier (2001), discussed in the last chapter. Mattick and Clarke state that social phobia is:

'anxiety and fear at the prospect of being observed or watched by other people, and in particular, where the individual expresses

distress when undertaking certain activities in the presence of others' (p. 457).

Examples of some activities in which a socially phobic individual may experience distress are listed as: eating, drinking, writing, signing one's name, using public toilets, working, travelling on public transport in view of others, walking in front of others, or simply being observed. Mattick and Clarke state that the fear for socially phobic individuals in these situations is that they will be seen as being anxious, faint, sick, odd, to shake or tremble, blush, or show physical signs of distress.

Mattick and Clarke (1998) define social interaction anxiety as:

'distress when meeting and talking with other people, be those members of the opposite sex, strangers, or friends' (p.457).

Here, the authors state that the socially anxious individual's fear is of being inarticulate, boring, sounding stupid, not knowing what to say or how to respond within social interactions, and of being ignored.

### **Reasons for the selection of the SPS and SIAS**

One reason for the selection of Mattick and Clarke's (1998) SPS and SIAS scales for the research reported in Chapter 6 was the fact that as well as measuring social interaction anxiety, they also measure the scrutiny fears associated with social phobia. Marks and Matthews (1979) have produced a social phobia subscale, but this was designed as a brief self-rating scale, not

a fully comprehensive measure of this condition. Mattick and Clarke (1998) themselves described how Marks and Matthew's scale does not assess many of the fears associated with social phobia, such as writing or signing one's name while others are observing, urinating in public toilets, blushing, shaking and trembling. Furthermore, Mattick and Clarke described how other scales related to social anxiety such as the Social Avoidance and Distress Scale (SADS) and the Fear of Negative Evaluation Scale (FNES; Watson and Friend, 1969) do not assess scrutiny fears (FNES focuses on maladaptive cognitions and SADS looks at generalised social interaction fears only).

The SPS and SIAS were also selected to measure social interaction anxiety and social phobia because they have both been rigorously tested in terms of validation issues. For example, in regard to scale-item characteristics, Mattick and Clarke reported that all of the items on their scales have item-total correlations equal to or greater than 0.40 for either one, or both of a socially phobic and normal sample. Furthermore, as will now be discussed, Mattick and Clarke also reported that both scales possess high levels of reliability, discriminant validity and construct validity.

In regard to reliability issues, internal consistency and test-retest reliability of the scales were shown to be strong by Mattick and Clarke. Internal consistency was measured using Cronbach's alpha and was .94 for both the SPS and SIAS. To measure test-retest reliability, 36 participants involved in a treatment-outcome study on social phobia completed the SPS and SIAS twice before receiving treatment, using an average test-retest period of 4 weeks. The Pearson-product moment correlation coefficients between the resulting scores were 0.91 for the SPS and 0.92 for the SIAS.

Also, nine socially phobic wait-list control participants completed the scales twice using an average test-retest period of 12 weeks. The Pearson-product moment correlation coefficients between these scores were 0.93 for the SPS and 0.92 for the SIAS.

In regard to discriminant validity, the scales were shown to discriminate between social phobia, agoraphobia and simple phobia samples using planned ANOVAs, and also between social phobia and normal samples.

In regard to construct validity, moderate to high intercorrelations between the SPS and the SIAS and the social phobia subscale of Marks and Mathews (1979) fear questionnaire, the SADS and FNES (Watson and Friend, 1969), the state and trait forms of the STAI (Spielberger, Gorsuch, and Lushene, 1970) the BDI-Short Form (Beck and Beck, 1972) and the Locus of Control of Behaviour Scale (LCBS; Craig and Andrews, 1985) were found. The intercorrelations of the SPS and SIAS with the social measures (FNES, SADS, social phobia subscale of Marks and Mathews (1979) fear questionnaire) were marginally higher than the intercorrelations with the measures of general distress (STAI-S, STAI-T, BDI-S and LCBS) as would be expected with a valid scale. Furthermore, eighty-two socially phobic patients involved in a treatment-outcome study had significantly changed SPS and SIAS scores after treatment as would also be expected with a valid scale.

However, there were one or two problems with the SIAS and SPS that Mattick and Clarke reported, although these were certainly not considered severe enough to prevent their use in this thesis' research. The first issue was that participants can fake their responses on these scales, although it is true that this could also be a problem with other scales as well. In addition, most

items are scaled in the same direction, which Mattick and Clarke themselves stated can increase the likelihood of response bias.

Furthermore, there is a high correlation between the SPS and measures of social anxiety, which raises the question as to whether social interaction anxiety and social phobia are really separate conditions. Mattick and Clarke (1998) argued that they are indeed separate, but that the high intercorrelation can be accounted for by the fact that social phobia may often coexist with social anxiety. As was argued in Chapter 4, there is certainly support for this argument, for example as described by Heiser et al. (2003) who found that although social phobia was more prevalent among shy people than non-shy, most of the shy group that they investigated did not have social phobia, and that of individuals who were diagnosed with social phobia, some were not shy.

## **Confirmatory Factor Analysis**

### **Introduction**

This chapter will now discuss a confirmatory factor analysis of Mattick and Clarke's (1998) SPS and SIAS scales that was performed to further investigate their validity. The scale had been deemed appropriate to use for the research reported in Chapter 6 by virtue of its other statistical properties, but it was considered that further investigation into the factorial properties of the scale would also be constructive. In reporting this, the CFA procedure will first be described.

The statistical technique of factor analysis analyses patterns of covariances in data to provide support for the existence of latent constructs

underlying them. That is, it assumes that the covariances in a set of data can be explained by a smaller number of latent factors. There are two types of factor analysis which are: Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). Briefly, EFA is for situations where links between the data and the underlying constructs are unknown. In this situation, all variables are loaded onto all factors, and the best solution is found using a transformation method such as Varimax rotation. An explanation of EFA can be found in many statistics textbooks.

However, it is the second of these, CFA, which is being considered here. The main difference between CFA and EFA is that in the former, the researcher has some theoretical notion of the links that might exist between a set of data and its underlying constructs, or latent factors, prior to analysing it, whereas in the latter he or she does not. In CFA the researcher attempts to statistically test for the goodness of fit of the data to this hypothesised structure. An excellent introduction to CFA can be found in Byrne (1994) and Hox and Bechger (1998).

At this point, a word or two about the path diagrams that are used to represent models that are hypothesised to underlie sets of data in CFA is necessary. Convention is that observed variables are represented by a box, and latent variables, or factors, are represented by ellipses or circles. Single-headed arrows indicate causal relationships, with the variable at the pointed end of the arrow being caused by the variable at the tail end, and double-headed arrows indicate correlations between variables without causation. Figure 31 (which is the model that will be described shortly and tested in this study) uses this notation. Thus, for example, in this diagram it can be seen

that the latent construct of social phobia is predicted to cause a general scrutiny concern ('Scrutiny'), specific fears of writing in public, drinking in public, trembling, and shaking head ('Specific') and fears of being viewed as sick, ill or odd ('Sick/ill/odd'). Each of these latter three factors causes a score on a number of items (10, 6 or 4 respectively) on the SPS. The latent construct Social Phobia is correlated with Social Interaction Anxiety, and this in turn causes a score on the 19 items of the SIAS.

A number of programs exist which enable CFA. These include EQS, LISREL and AMOS. For the purposes of this paper, data were analysed using the Windows-based program EQS Version 6.

Once a model has been hypothesised in CFA, statistical tests are carried out on covariances calculated from the data to see how much they differ from covariances predicted by the suggested model. Tests that EQS executes for this purpose include the Chi-squared ( $\chi^2$ ) test, the Comparative Fit Index (CFI) and Bollen's Incremental Fit Index (IFI). A hypothesised model is supported by the Chi-squared test if the result of it is non-significant, because this shows that the model is not significantly different from that indicated by the data. For the CFI and IFI, results close to 1.0 (around 0.9 and above) are generally accepted to be indicative of good fit (Bentler, 1990b).

Other measures indicate how badly the hypothesised model fits the data. These include the Standardized Root Mean Square of the Residuals (SRMR) and the Root Mean Square Error of Approximation (RMSEA). For the SRMR, 0.08 or less is indicative of good fit (Hu and Bentler, 1999) and for the RMSEA, 0.08 or less indicates satisfactory fit and 0.05 or less indicates good fit (Browne and Cudeck, 1993; cited in Loehlin, 1998).

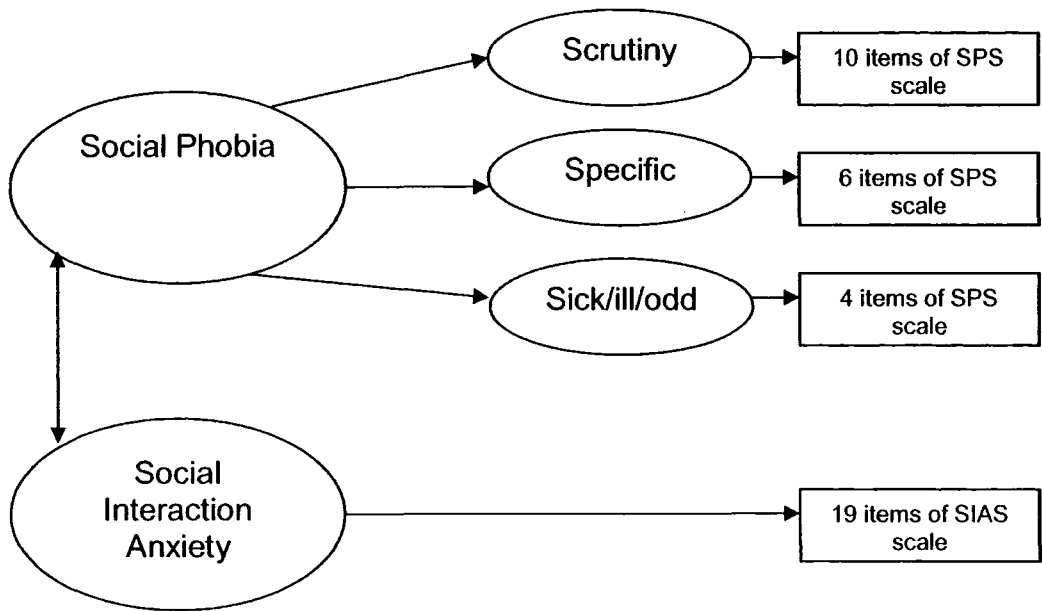
Mattick and Clarke (1998) carried out EFA in order to determine the structure of each of their scales and found three factors with eigen-values over 1.0 for the SPS, which accounted for 47.7 percent of the variance. According to Mattick and Clarke (1998), the first factor represented, "a general scrutiny concern to do with being observed or attracting attention in a variety of public places" (p.462). Items 2, 3, 4, 6, 8, 15, 16, 17, 18 and 20 of the SPS loaded onto this factor. The second factor consisted of items associated with specific fears of writing in public, drinking in public, trembling and shaking head. Items 1, 7, 10, 11, 13 and 19 loaded onto this factor. The third, and final, factor was consistent with anxieties about being seen as, "sick, ill, odd, or having lost control in front of others." (p. 462). Items 5, 9, 12 and 15 loaded onto this.

For the SIAS, one factor with an eigen-value greater than 1.0 was obtained which accounted for 43.4 percent of the variance. The authors stated that this one factor represented social interaction fear. Thus, all the items of the SIAS loaded onto this one factor.

Mattick and Clarke also found a correlation of 0.72 between the SPS and SIAS.

The present study attempts to confirm the factor structure of the SIAS and SPS as suggested by Mattick and Clarke, the information just discussed indicating that the SPS is best represented by a second order model consisting of one overall factor of social phobia underlying three separate factors of: fear of scrutiny, specific fears, and fear of being perceived as sick, ill or odd; and the SIAS being represented by a correlated single factor model representing social anxiety. This model is shown in Figure 31.

Figure 31. Confirmatory Factor Analysis Model (CFA)



## Method

### Participants

362 participants from schools, a college and a university in the Teesside area were asked to complete both the SIAS and SPS. 333 participants completed the SPS in full: 137 of these were male and 196 were female, and the mean age for this group was 18.6. 327 participants completed the SIAS, of which 135 were male and 192 were female. The mean age of participants for this group was 18.7. The age range of participants was 14-52 years for both groups. The participants were also asked to complete a questionnaire concerning their use of the Internet and mobile phones for the study reported

in Chapter 6 along with the SPS and the SIAS. These results will be discussed in that chapter.

### Procedure

Respondents answered all questions on a five-point (0-4) Likert-Type rating scale. For each item, respondents were asked to 'indicate the degree to which you feel the statement is characteristic or true of you'. The five anchor points supplied with the verbal descriptor were: not at all, slightly, moderately, very and extremely.

### Results and Analyses

Table 6 shows summary statistics describing the scores achieved by the participants for each of the two scales.

Scale	Minimum score achieved (Minimum possible score)	Maximum score achieved (Maximum possible score)	Mean	SD
Social Phobia (n=333)	0 (0)	74 (80)	19.8	13.9
Social Interaction Anxiety (n=327)	0 (0)	65 (76)	21.6	13.8

Table 6. Descriptive statistics for Social Phobia and Social Interaction Anxiety Scales

Confirmatory Factor Analysis using EQS version 6 was used to test the factorial validity of Mattick and Clarke's (1998) SPS and SIAS.

### **Confirmatory Factor Analysis**

Fit statistics for the model indicated by Figure 31 are shown in Table 7. The Chi-squared value for this model is significant ( $\chi^2 = 1750.325$ ,  $df = 697$ ,  $p < 0.00005$ ), and is not indicative of a good fit to the data. However, amongst others, Hox and Bechger (1998), Muncer and Campbell (2004) and McRae, Zonderman, Costa, Bond and Paunonen (1996) have argued that it is not advisable to rely on the Chi-squared statistic to indicate goodness of fit, as it is likely to almost always be significant with large samples, and with small samples it can be non-significant even with fairly large discrepancies.

Therefore, with a large sample, such as that used in this study, a model will be rejected even if it accurately fits the data. Therefore, the CFI and IFI, which are not so reliant on sample size should also be considered. The score for both of these indices was 0.84, which was considered a passable fit (0.90 or above is generally accepted to be indicative of adequate fit for these indices).

Hox and Bechger (1998) have also advised an approach to CFA that states that one should accept that perfect fit to a model is too much to ask for in CFA and that instead one should assess how well a given model approximates the true model by examining further indices, including the Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square of the Residuals (SRMR). If the data approximate a model well, then the RMSEA and SRMR should be low. For the current CFA, the SRMR was .055 which is indicative of good fit (0.08 or less is acceptable), and the

RMSEA was 0.065 which is indicative of reasonable fit (0.08 or less is indicative of satisfactory fit and 0.05 or less is indicative of good fit for this measure).

Given that the CFI and IFI results were close to 0.9 and the SRMR and RMSEA were both low, it was considered that Mattick and Clarke's suggested factorial structure of the SIAS and SPS fitted the data reasonably well.

Model	df	$\chi^2$ (ideally small and insignificant)	CFI (ideally >0.9)	IFI (ideally >0.9)	SRMR (<0.08 = good fit)	RMSEA (<0.08 = satisfactory fit, <0.05 = good fit)
CFA 1	697	$\chi^2 = 1750.325$ , $p < .00005$	.84	.84	.06	.07

Table 7: Goodness of fit statistics for model

## Conclusion

Mattick and Clarke's SIAS and SPS scales were chosen for use in investigating whether or not social anxiety and social phobia are related to use of the Internet and mobile phones for communication purposes because as well as measuring social interaction anxiety, these scales also measure the scrutiny fears which are at the heart of social phobia. Furthermore, Mattick and Clarke's scales were shown to be robust in terms of issues associated with validity and reliability and so were acceptable for use. It was also beneficial that a CFA of the SIAS and SPS indicated that the factorial structure of the scales suggested by Mattick and Clarke may be accurate.

## **Chapter 5**

### **A correlational study investigating the relationship between Internet and mobile phone use and social anxiety and social phobia amongst young people**

#### **Method**

##### **Measures and Procedure**

The questionnaire used for this study can be found in Appendix III. This was distributed to participants from September to November 2003. As part of this questionnaire, participants were asked to complete Mattick and Clarke's (1998) Social Phobia (SPS) and Social Interaction Anxiety (SIAS) scales as discussed in the last chapter. The SPS consists of 20 questions which assess the fear of being scrutinised during routine activities, and the SIAS consists of 19 questions which assess fears of more general social interaction.

Respondents answered all SPS and SIAS questions on a Likert-Type rating scale. For each item on the SIAS and SPS, participants were asked to 'indicate the degree to which you feel the statement is characteristic or true of you' on a five point scale which used the following descriptors: 0 = 'not at all', 1 = 'slightly', 2 = 'moderately', 3 = 'very' and 4 = 'extremely'.

Participants also answered questions which asked for their demographic details and about their use of the Internet and mobile phones. In the latter regard, the first question was, 'Do you use the Internet?' This was followed by 'for how many hours a week do you use the Internet?', and for this

question, participants were required to endorse one option from a list of twelve that included measures of time between 'less than one hour' and up to 'more than 60 hours' per week. It was hoped that this range of times would cover most possible responses to this question, based on findings from the survey reported in Chapter 2.

Questions about frequency of use of the Internet for various purposes were then included. For each of these, participants were required to circle one of five anchor points supplied with the question which were 0= 'never', 1='very infrequently', 2='fairly infrequently', 3='fairly frequently' and 4='very frequently'. The purposes of Internet use described were: finding information about goods/services, using e-mail, general browsing or surfing, finding information related to education, buying or ordering tickets, goods or services, personal banking/financial/investment activities, looking for work, playing or downloading music, using or accessing government/official services, using chat rooms or sites, using instant messaging services, playing games, using auction sites (e.g. e-bay), using discussion forums/newsgroups/usenet and 'other purposes'. Apart from instant messaging, using discussion forums/newsgroups/usenet, and using auction sites, these were the same activities that had been described in surveys conducted by the Office for National Statistics (the UK's official statistics organisation) for adults. Instant Messaging, using discussion forums/newsgroups/usenet and using auction sites were added because these had been indicated to be reasonably popular amongst young people by the surveys reported in Chapters 2 and 3.

Participants were then asked whether or not they used a mobile phone, and about their frequency of use of mobile phones for various purposes. The

same anchor points used in the question about Internet activities were employed for mobile phone items. The purposes of mobile phone use described were: making calls, receiving calls, text messaging, playing games, downloading/creating ringtones, and 'other purposes'.

In an initial version of the questionnaire, participants had also been asked a question which asked them to rank eight methods of communication in terms of which they preferred to use most and which they preferred to use least. (This question can be viewed as part of the questionnaire in Appendix III). The methods of communication described were: instant messaging, mobile phone calls, landline phone calls, text messaging, email, chat rooms, face-to-face communication, and writing letters. In a brief pilot study in which a small group of twelve students had been asked to complete a preliminary version of the questionnaire, this question had not caused any problems and so it had been included in the final version. However, when questionnaires from the survey proper were collected, it was found that answers to this question contained a high proportion of missing answers. In fact, 40.9 percent of respondents had not answered the question correctly. This may have been because a considerable proportion of the respondents who answered the questionnaire in the survey proper were younger than those who had completed it in the pilot study, and so they may have had more difficulty with understanding the ranking procedure. The percentage of missing answers for other questions was much lower, ranging from 0 to 6.6 percent. Therefore, the decision was taken to exclude the 'ranking' question from the results, as it was felt that the answers from this question could not be considered reliable.

The questionnaire was tested for its reading ease using the Flesch-Kincaid Grade score, which rates text on a U.S. school grade level. The result is based on average sentence length and average number of syllables per word. The questionnaire achieved a Grade Level of 6.5, which would indicate that in regard to these factors, the questionnaire could be understood by someone aged 12 years or older.

### **Participants**

The sample was the same as that used for the study reported in Chapter 4. That is, 362 students from two schools, a college and a university in the Teesside area in England. The mean age of participants was 18.5 and ages ranged from 14 to 52 (although 90.6 percent of the sample was aged 21 or less and 96.1 percent was aged 30 or less). By gender, 40.3 percent of the sample was male and 59.7 percent were female. A slightly older age group was used for this sample as compared to that used for the surveys reported in Chapters 2 and 3 because research has shown that social phobia tends to arise in mid (around age 15), rather than early adolescence (Schneier, Johnson, Hornig, Liebowitz and Weismann, 1992).

In terms of ethnicity the sample can be considered fairly representative of the rest of the UK. Figures from the National Statistics Web-site state that in April 2001, 92.1 percent of the UK population could be described as 'White' compared with 90.9 percent in this sample, 2.0 percent could be described as 'Black Caribbean/Black African' or 'Black Other' compared with 1.9 percent described as 'African/Afro-Caribbean' in this sample, 4.0 percent could be described as 'Indian, Pakistani, Bangladeshi' or 'Other Asian' compared with

3.9 percent described as 'Asian' in this sample, and 0.4 percent were described as 'Chinese' compared with 0.3 percent described as 'Oriental' in this sample. Finally, 0.3 percent of participants from this sample could be described as 'Arabic' but there is no comparative figure from the Office for National Statistics for this group. Finally, 2.8 percent of participants did not state their ethnic background.

The SPS was completed fully by 333 participants and the SIAS was completed fully by 327 participants.

## **Results**

### **Internet questions**

In response to the question, 'Do you use the Internet?', it was found that 97.8 percent of the sample answered affirmatively. This figure is somewhat higher than that found in the surveys of Internet and mobile phone use reported in Chapters 2 and 3. This may in part be because the number of Internet users had risen since the time when these surveys were conducted, and also because the sample used for the present study was around 5 years older than that used for the surveys reported in Chapters 2 and 3.

Figure 32 shows the number of hours per week that participants stated that they spent using the Internet. The modal response, for 17.4 percent of the participants, was more than 5 hours but less than 10 hours per week. However, large numbers of participants also gave responses that were considerably more or less than this.

Figure 32: Time spent using the Internet by sample

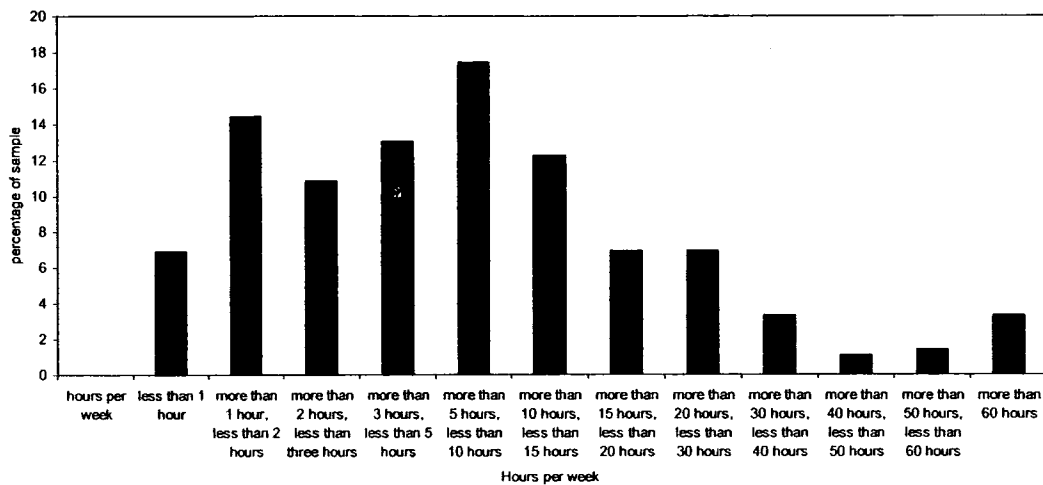
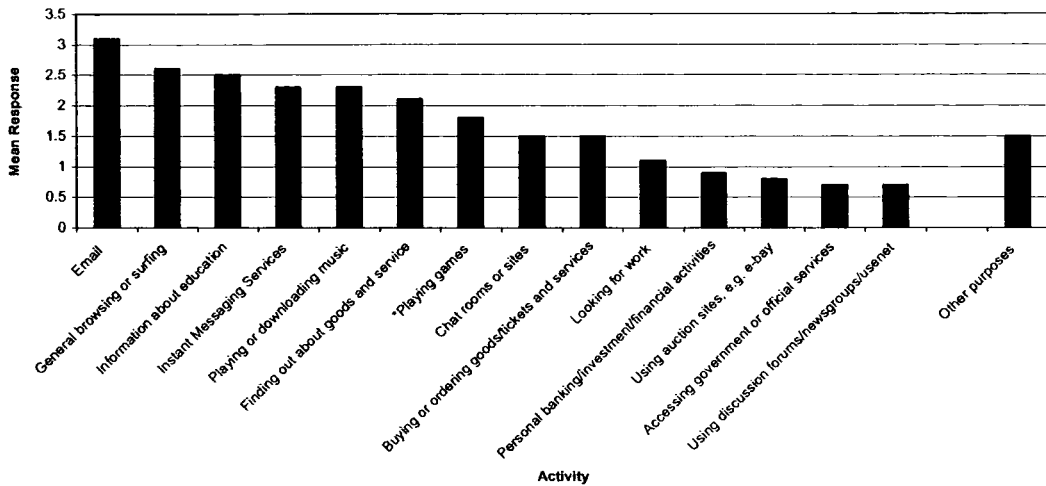


Figure 33 shows the frequency with which participants stated that they used the Internet for different purposes. Broadly speaking, no Internet activities were reported to be carried out very frequently; email, general browsing or surfing, and finding information about education were reported to be carried out fairly frequently; instant messaging, playing or downloading music, finding out about goods or services, playing games, using chat rooms or sites and buying or ordering goods, tickets and services were reported to be carried out fairly infrequently; and looking for work, personal banking/investment/financial activities, using auction sites (e.g. e-bay), using government or official services and using discussion forums/newsgroups/usenet were reported to be carried out very infrequently.

In regard to communication purposes of the Internet, if the results are viewed in conjunction with those from the surveys reported in Chapters 2 and 3, it can be seen that they suggest that the order of popularity of communication functions of the Internet is: email, instant messaging, use of

chat rooms or sites and finally use of discussion forums/newsgroups/usenet. This is both in terms of whether or not they are used by young people, and in terms of how often they are used by young people.

Figure 33: Frequency of Purpose of Internet use

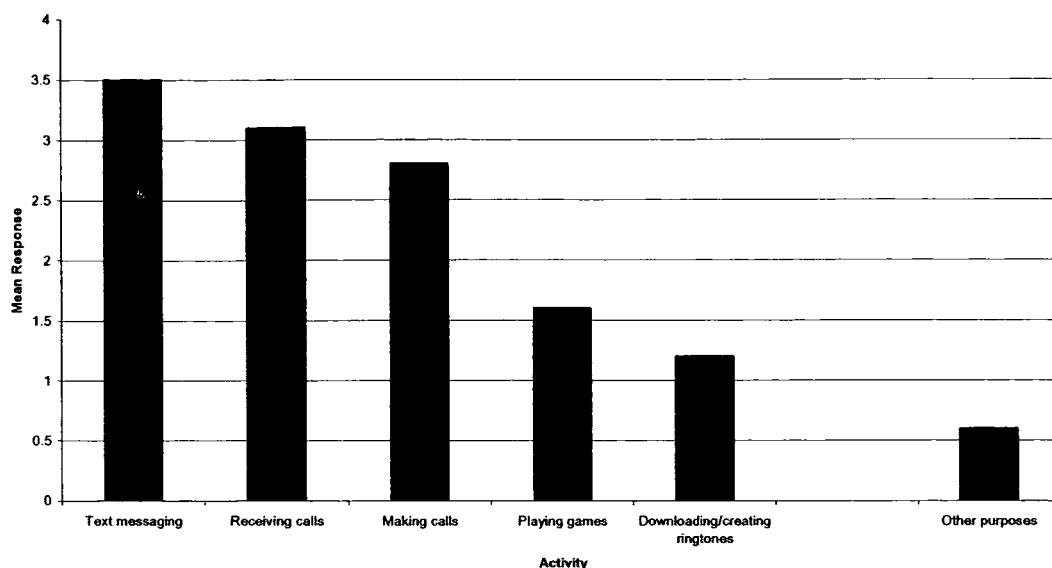


### Mobile phone questions

In response to the question, ‘Do you use a mobile phone?’ 95.0 percent of participants answered affirmatively.

Figure 34 shows the frequency with which participants stated that they used their mobile phones for different purposes. Participants indicated that they very frequently carried out text messaging, fairly frequently received and made calls, fairly infrequently played games and very infrequently downloaded or created ringtones.

Figure 34: Frequency of purpose of mobile phone use



### SIAS and SPS Scores

Table 8 shows mean scores on the SIAS and SPS. It indicates that males scored significantly lower than females on the SPS but that there was no significant difference between the genders' scores on the SIAS. For the purposes of comparison, a 'Community' sample investigated by Mattick and Clarke (1998) achieved significantly lower scores of 18.8 on the SIAS and 14.4 on the SPS (SIAS:  $t(326)=3.66$ ,  $p<.0005$ ; SPS:  $t(333)=7.09$ ,  $p<.0005$ ).

	Minimum score achieved (Minimum possible score)	Maximum score achieved (Maximum possible score)	Mean score for whole Sample (s.d.)	Mean score for males (s.d.)	Mean score for females (s.d.)	Independent T-test result, males vs. females.
SIAS (max score = 80)	0 (0)	74 (80)	21.6 (13.8)	20.1 (13.0)	22.7 (14.2)	$t(325)=-1.69$ , $p=.09$
SPS (max score = 76)	0 (0)	65 (76)	19.8 (13.9)	16.7 (12.9)	22.0 (14.2)	$t(331)=-3.47$ , $p=.001$

Table 8: Mean scores on the SIAS and SPS for males and females.

## **Inferential Statistics**

As social anxiety is relatively common amongst the general population, with estimates of the prevalence of shyness ranging from 20 to 48 percent (Heiser et al, 2003), it was considered that it would make sense to use correlation methodology to examine if this condition was associated with the use of the Internet and mobile phones for communication purposes. This method was also considered appropriate because shyness differs in degree between individuals. One can be very shy, or just a little shy.

Social phobia, on the other hand, has a much lower prevalence, estimated at 3 to 8 percent for the general population (Heiser et al., 2003). Furthermore, the definitions of social phobia described earlier imply that one either has or does not have this condition. Therefore, it was considered that it would make most sense to examine if there were differences in levels of Internet and mobile phone use between those who displayed symptoms of this condition and those who did not. It should be emphasised that those people who are described as the 'social phobia' group later in this section are not being labelled as having social phobia as such. Rather, this group simply seemed to possess some of the characteristics of social phobia as highlighted by Mattick and Clarke's (1998) SPS scale.

For the correlations reported in this section, results have been taken as significant if  $p < .05$ . However, as with the correlations reported in Table 2 (Chapter 2), it is recognised that it could be argued that a Bonferroni correction should be made to the significance level chosen, as many calculations have been carried out, which increases the chance of achieving significant results. Therefore, correlations which achieve a significance of

$p < .05$  should be taken as merely suggestive of particular patterns rather than strong evidence that the variables involved are related.

As elsewhere, pairwise, rather than listwise, exclusion of cases with missing values was used in calculating correlations because deletion of any case with a missing value from all correlations calculated would have greatly limited the sample size. Correlations which do not support the hypotheses made in Chapter 1 are shaded.

### **Social anxiety and Internet use**

There was no significant correlation between SIAS scores and whether or not respondents used the Internet for the whole sample ( $r_{pb} = -.06, p = .32$ ).

Table 9 shows correlations between SIAS scores and time spent using the Internet overall, and for communication purposes. The communication purposes email, chat rooms and sites, and instant messaging were selected for examination by this study because these were reported as the most popular Internet communication activities amongst young people.

Internet –related activity	SIAS score
Hours per week spent using Internet	$r_s = -.16,$ $p = .004$
Email	$r_s = -.14,$ $p = .02$
Chat rooms and sites	$r_s = .03,$ $p = .61$
<i>Instant Messaging Services</i>	$r_s = -.02,$ $p = .68$

Table 9: Correlations between SIAS scores and frequency of use of the Internet for communication purposes

Table 9 shows that, for the whole sample, there was a small but significant negative correlation between SIAS scores and the number of hours per week spent using the Internet.

Table 9 also shows that there was a small but significant negative correlation between use of the Internet for email and SIAS scores. However, correlations between SIAS scores and use of the Internet for chat rooms and sites and instant messaging services were non-significant.

## Social anxiety and mobile phone use

A small but significant positive correlation between SIAS score and whether or not the respondents stated that they used a mobile phone ( $r_{pb} = .11, p=0.05$ ) was found.

Table 10 shows correlations between communication functions of mobile phone use and scores on the SIAS and SPS. Making and receiving calls and text messaging were selected for study because these seemed to be the most popular mobile phone communication functions amongst young people.

Frequency of use of mobile phones for...	SIAS score
Making calls	$r_s = -.07,$ $p = .23$
Receiving calls	$r_s = -.19,$ $p = .009$
Text messaging	$r_s = -.07,$ $p = .24$

Table 10: Correlations between SIAS scores and frequency of use of mobile phones for communication purposes.

Table 10 shows that there was a small but significant negative correlation between SIAS scores and frequency of use of mobile phones for receiving calls. There were no correlations between scores on the SIAS and frequency of use of mobile phones for making calls or text messaging.

## Social phobia and Internet use

For this section of the Results, comparisons were made between a group of participants who could be considered to have symptoms of social phobia and participants who would not be considered to have these. There were 37 participants who were considered to have symptoms of social phobia. These participants had scores of 40 or over on the SPS. It was felt that this would be a suitable cut-off point for inclusion in a 'social phobia' group because Mattick and Clarke (1998) had obtained a mean SPS score of 40 for a group of socially phobic participants in their study. In the present study, 296 participants had a score of below 40 on the SPS and these were compared with the 'social phobia' group. The remaining participants did not include enough information on the scale to be able to calculate their SPS score. Table 11 shows differences between the 'social phobia' and 'non-social phobia' groups in terms of their use of the Internet for various purposes.

	Mean score (s.d.)		Mann-Whitney test of difference
	Social phobia group	Non social phobia group	
Do you use the Internet? (0=no, 1=yes)	1.0 (0)	1.0 (0.13)	U=5383.500, p=.43
How many hours per week do you spend using the Internet? (0 = less than 1 hour, 11 = more than 60 hours)	3.5 (3.0)	3.9 (2.6)	U=4663.000, p=.19
How often do you use the Internet for email? (0=never, 4 = v. frequently)	3.0 (1.1)	3.1 (1.1)	U=4832.000, p=.32
How often do you use the Internet for instant messaging? (0=never, 4 = v. frequently)	2.5 (1.3)	2.3 (1.6)	U=4711.000, p=.39
How often do you use the Internet for chat rooms or sites? (0=never, 4 = v. frequently)	2.3 (1.6)	1.4 (1.5)	U=3520.500, p=.001

Table 11: Differences between 'social phobia' and 'non-social phobia' groups in aspects of Internet use

Table 11 shows that there were no significant differences between the 'social phobia' and 'non-social phobia' groups in whether or not they used the Internet, in how many hours per week that they spent using the Internet, in how often they used the Internet for email and in how often they used the Internet for instant messaging. However, Table 11 also shows that there was a significant difference between the 'social phobia' and 'non-social phobia' groups in the frequency with which they used the Internet for chat rooms and sites. Participants in the social phobia group indicated that they used the Internet for this function slightly more often than non-socially phobic individuals.

### Social phobia and mobile phone use

Table 12 shows differences between participants in the 'social phobia' and 'non-social phobia' groups, in terms of their use of mobile phones, overall, and for various communication purposes.

	Mean score (s.d.)		Mann-Whitney test of difference
	'Social phobia' group	'Non social phobia' group	
Do you use a mobile phone? (1= 'yes', 0='no')	1.0 (0.16)	1.0 (0.23)	U=5328.000, p=.48
How often do you use a mobile phone for making calls? (0=never, 4 = v. frequently).	2.9 (1.0)	2.8 (1.0)	U=4607.000, p=.75
How often do you use a mobile phone for receiving calls? (0=never, 4 = v. frequently)	2.9 (1.1)	3.1 (0.9)	U=4435.000, p=.35
How often do you use a mobile phone for text messaging? (0=never, 4 = v. frequently)	3.4 (1.0)	3.5 (0.8)	U=4959.000, p=.88

Table 12: Differences between 'social phobia' and 'non-social phobia' groups in aspects of mobile phone use

Table 12 shows that there were no statistically significant differences between the 'social phobia' and 'non-social phobia' groups in: whether or not they used a mobile phone, how often they used a mobile phone for making calls, how often they used a mobile phone for receiving calls and how often they used a mobile phone for text messaging.

### **Discussion**

The results suggested that email was the most popular of the Internet communication activities studied, followed by instant messaging, then chat rooms or sites. These were considered to be the most important communication functions to young people and so their relationship with social anxiety and social phobia was explored. Another form of Internet communication, discussion forums/newsgroups/usenet, was not indicated to be carried out very frequently, and so this function was excluded from further examination (Figure 33). It would probably be predicted that email would be the most frequently used method of Internet communication. For example, the Pew Internet Report (2000) found that over 90% of people who used the Internet during a typical day in the year 2000 sent or received email. However, this set of findings are perhaps most interesting because they indicate that instant messaging may currently be carried out more often than chat room use amongst young people. Reasons for the popularity of instant messaging will be discussed in more detail in Chapter 6 of this thesis. Text messaging and making and receiving calls seemed to be the most frequently carried out communication functions of mobile phones (participants indicated that they

used their mobile phones for 'other purposes' only very infrequently) and so these were also selected for further examination by this study (Figure 34).

Females' scores on the SPS were significantly higher than males', but their scores on the SIAS were not significantly different. This finding is congruent with studies which have suggested that social phobia is more common amongst women than men (Furmark, 2002) but that there is no gender difference in shyness (Carducci and Zimbardo, 1995).

The correlations achieved in this study do not suggest that social anxiety is highly correlated with use of the Internet and mobile phones either generally, or for communication purposes, although one or two small correlations with some aspects of the use of these technologies were found. Most notably, these were that socially anxious young people indicated that they used the Internet for fewer hours per week than less socially anxious young people, and that they received fewer emails and mobile phone calls than less socially anxious people. These results do not support the hypotheses made that shyer young people would use the Internet more than those who were less shy and that shyer young people would use the Internet for communication more than those who were less shy. However, these results do provide some support for the hypothesis that shy young people would use mobile phones less than those who were non-shy (although other results concerning mobile phone use, which will be discussed shortly, do not support this hypothesis).

It is possible that shyer young people indicated that they used the Internet less than non-shy young people because Internet use is correlated with a third personality characteristic which is really at the root of lower

Internet use. The most likely candidate could be neuroticism. Neuroticism has been shown to be negatively related to web usage (Tuten and Bosnjak, 2001) and also positively correlated with shyness (Jones et al., 1986; cited in Heiser et al., 2003). It would therefore be beneficial for future research to examine whether social anxiety is still negatively related to Internet usage if neuroticism is controlled for. It may be that there are positive correlations between social phobia and social anxiety and levels of individuals' Internet use once neuroticism is removed from the picture.

Shyer young people might have indicated that they used the Internet for email, and mobile phones to receive phone calls, less often than non-shy young people because they have fewer social contacts. However, the negative correlations relating to this were only small and it should be noted that shy young people did not use other forms of Internet and mobile phone communication, such as instant messaging, chat rooms and text messaging any differently to non-shy young people. As a group then, these findings concerning shyness and Internet use can be seen as generally congruent with those described in the literature review that suggested that shyness is not a barrier to use of the Internet for communication (Strizke, Nguyen and Durkin, 2004; Ward and Tracey, 2004; and Roberts et al., 2000). In addition they support findings reported by Peris et al. (2002) and Scealy et al. (2002) that shyness is not a characteristic of chat room users. The reason that shyness may not be a barrier to use of the Internet for communication purposes may be explained by the theories discussed in Chapter 1: including anonymity, social presence theory, intimacy-equilibrium theory, the self-presentational

theory of social anxiety, and reduced social cues (RSC) models of disinhibited behaviour.

To bring the discussion to other results concerning shyness and mobile phone use, a significant positive correlation (albeit very small) between SIAS score and whether or not participants used a mobile phone was found. On first inspection one might argue that, contrary to the hypothesis offered in Chapter 1, this indicates that those who are socially anxious might actually be more likely to use mobile phones for communication purposes. However, the fact that correlations between measures of frequency of mobile phone use for communication and social anxiety were not positive suggests that it may not be the pure communicative functions of mobile phones that appeal to shy individuals. A more likely explanation for the small positive correlation between mobile phone ownership and social anxiety might be that young people who are shy may have difficulty in establishing themselves in friendship groups by the usual routes that one would expect, such as social interaction. Mobile phone ownership is one easy way for such individuals to increase their social capital without having to engage in anxiety-provoking personal discourse. Social capital, according to Coleman (1986) who was the originator of the term, can be defined as 'a common set of expectations, a set of shared values, and a sense of trust among people (p.306). Putnam (2000), who is a leading proponent of the term 'Social capital', further described it as 'networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit' (p.66). Mobile phones may increase a young person's social capital even if they are seldom used for communication as ownership of

this device may be a shared expectation or norm for that young person's peer group.

A number of researchers have supported the idea that mobile phone ownership can increase young people's social capital. In a discussion of research related to the societal perspectives of mobile telephony, Ling (2004) stated that this technology affords 'social integration at the symbolic level and provides the individual with a sense of self' (p.184). Ling's own research (Ling and Yttri, 2001) also revealed that young people view their mobile phones as fashion statements and that having the wrong phone can have a negative influence on an adolescent's affiliation with his or her peer group.

Furthermore, Ling (2003) argued that mobile phones can be seen as part of an individual's 'personality kit', describing how artefacts are frequently used by teenagers to mark boundaries between different social groups. As well as Ling, Lobet-Maris (2003) argued that the significance of mobile phones for young people is not just as a tool for communication but also as a symbol of identity. Data which supported this assertion came from a survey carried out in October 2000 by Motorola-Inra with 300 12-18 year old Belgian participants, which found that young people's choice of one phone over another is often determined by style rather than function. Furthermore, Haste (2005) argued that identity and style are important for young people where mobile phones are concerned, stating that 67 percent of young people personalise their phones with a background screen image, 58 percent with a downloaded ringtone, and 36 percent with a snap-on cover. Finally, Taylor and Harper (2002) and (2003) opined that text messaging resembles the social practice of gift giving amongst young people as text messages have

symbolic meaning for the recipient, can demonstrate commitment to a relationship, and come with an expectation of reciprocity. They also stated that young people may often share their mobile phones and the credit attached to them in a system of exchange which is valued by the social group. In the light of these studies, it can be seen that often it may not be the straightforward communicative aspects of mobile phones that are of most interest to young people at all; rather the use of mobile phones may have a more significant cultural meaning for them. This is an issue that has not escaped the attention of the popular press in the UK (Hanman, 2005). In particular, it may be the cultural aspects of mobile phone use that appeal to socially anxious young people specifically.

The fact that correlations between use of mobile phones for text messaging and shyness were close to zero, and therefore indicate that shyness does not inhibit the use of mobile phones for text messaging, may be explained by the theories that suggest why shyness is not be a barrier to use of the Internet for communication purposes. Thus, anonymity, social presence theory, intimacy-equilibrium theory, the self-presentational theory of social anxiety, and reduced social cues (RSC) models of disinhibited behaviour may equally predict why shyness may not be a barrier to text messaging as to communication via the Internet. In addition, the close-to-zero correlation between SIAS score and making phone calls, which indicates that social anxiety is not a barrier to the use of mobile phones for making calls, may have been achieved because, as Ling (2000) as argued, young people's motives for owning mobile phones are mainly accessibility, safety and micro-

coordination. The use of mobile phone calls for these activities may not be greatly affected by shyness.

This discussion will turn now to results associated with social phobia and use of the Internet. Results indicated that the presence of symptoms of social phobia did not make participants any more likely than others to use the Internet in general. This does not support the hypothesis made in the introduction. Therefore, even if socially phobic individuals do prefer to engage in solitary activities than those without symptoms of this condition (which was the reason that their greater Internet use was hypothesised) they may engage in alternative solitary activities to Internet use. There were also no significant differences between the socially phobic and non-socially phobic groups in terms of how often they used the Internet for email and how often they used it for instant messaging, which does not support the hypothesis that young people with social phobia would use the Internet more than others for communication.

However, the 'social phobia' group did indicate that they used the Internet slightly more often than the 'non-social phobia' group for chat rooms and sites. It could be argued that this provides some support for the hypothesis that those with symptoms of social phobia would use the Internet to communicate more than others, although this support is rather limited. The reason that chat rooms might be used slightly more often by those with symptoms of social phobia could be that these individuals may often enjoy social interaction, despite the fact that they have fears which tend to revolve around being scrutinised by others during routine activities. Therefore, for those with symptoms of social phobia, chat rooms may be ideal

communication forums: here, they may fulfil their social needs without the threat of being scrutinised that they would receive in face-to-face encounters. Furthermore, social encounters in chat rooms can be discrete, disconnected events. This may particularly appeal to those with symptoms of social phobia because having spoken to someone once or even a number of times, there is no necessity for them to meet face-to-face.

It is interesting that there is no difference between the 'social phobia' and 'non-social phobia' groups' levels of use of instant messaging because the characteristics of chat rooms and instant messaging forums are similar. However, chat rooms and instant messaging forums do tend to differ on one essential aspect: one is probably more likely to talk to strangers or 'Internet-only' acquaintances in chat rooms, whereas one would probably more often use instant messaging forums to talk to those who are off- as well as online contacts. This might mean that instant messaging is not any more popular amongst those with symptoms of social phobia than non-socially phobic people, as instant messenger communication might increase pressure on socially phobic people to meet face-to-face. Email might not be used any more often by those with symptoms of social phobia than others for the same reason. Thus, it can be concluded that whilst in general those with symptoms of social phobia do not use the Internet for communication purposes any more often than others, the use of chat rooms may be an exception to this rule to a small degree.

There were no differences between the 'social phobia' and 'non-social phobia' groups in terms of whether or not they used a mobile phone, how often they used a mobile phone for making calls, how often they used a

mobile phone for receiving calls, and how often they used a mobile phone for text messaging. This does not support the hypothesis that those with symptoms of social phobia would be less likely than those without these symptoms to use mobile phones for communication purposes. It may be that any shortfall in use of mobile phones for communication purposes by socially phobic individuals due to a lack of contacts is offset by the fact that they communicate more with those contacts that they do have in order to fulfil their social needs whilst avoiding scrutiny.

## **Conclusion**

As a group, the results reported in this chapter regarding how social anxiety and social phobia relate to Internet and mobile use suggest that these conditions are only slightly associated with one or two aspects of the use of these technologies. Given that this is the case, this thesis will next discuss qualitative methodology (a focus-group study) whose first purpose was to see if shyness might be important to young people's use of communication media in ways that were too complex to be picked up by the questionnaire's broad measure. (It was considered that social phobia would not be an issue that would be raised by young people in focus groups as this might be very personal and because this is a relatively uncommon condition anyway). The second purpose of the focus group study reported in the following chapter was to see if other issues were more relevant to young people than social anxiety and social phobia in determining their Internet and mobile phone use. The data collected from this study were analysed using Grounded Theory, which allows relevant categories of meanings to emerge from data, rather

than permitting pre-existing theories to drive what is studied. It was thought that this would be the best technique for allowing understanding of the aspects of Internet and mobile phone use that were of most relevance to young people themselves.

### **Final Note**

A paper relating to the research that was undertaken for this chapter is currently under review:

Internet communication: an activity which appeals to shy and socially phobic people? (Under review by *Cyberpsychology and Behavior*).

## **Chapter 6**

### **A Grounded Theory study of young people's use of the Internet and mobile phones**

#### **Introduction**

All methods in psychology are limited in some way, for example, amongst others, Rosnow and Rosenthal (2002) have argued that the use of only a single method will confine observations but that methodological pluralism allows us to obtain a more coherent picture of the research area. The approach of using multiple but imperfect perspectives is known as methodological triangulation. Given that Chapter 5 of this thesis indicated that the psychological characteristics of social anxiety and social phobia were not correlated with who does and does not use the Internet and mobile phones either generally, or for communication purposes, it was decided that methodological triangulation would be employed to investigate other issues which might be important to young people in terms of their use of communication media. In addition, it was considered that triangulation might reveal if social anxiety was related to young people's use of the Internet and mobile phones in ways that would not have been picked up by the broad questionnaire measure. Specifically, focus groups were used to collect data in this regard and Grounded Theory was used to analyse the data obtained. The focus groups participants were divided into a 'high shy' and 'low shy' group in order to examine if there were any specific differences in the ways that shy

and non-shy young people use mediated communication, and also for methodological reasons, which will be discussed shortly.

The reason for these choices of methodology will now be discussed. The focus group method of research was chosen because, as Kitzinger and Barbour (1999) have argued, focus groups are 'particularly suited to the study of attitudes and experiences around specific topics' (p.5) and are 'particularly useful for allowing participants to generate their own questions, frames and concepts and to pursue their own priorities on their own terms, in their own vocabulary' (p.5). This is as compared with questionnaires, which are described as more valuable for obtaining quantitative information or for finding out how many people hold a particular pre-defined opinion, and interviews which are useful for revealing individual biographies.

Grounded Theory, as developed by Glaser and Strauss (1967) was chosen to analyse the data because it was felt that this procedure supported the exploratory nature of the research, and the focus-group method of data collection, very well. Grounded Theory enables the discovery of theories within data without the use of pre-existing hypotheses, by the identification of categories of meanings from the data. However, unlike in Content Analysis, for example, in which categories of meaning are established before data are analysed, and are mutually exclusive, the categories used in Grounded Theory are not mutually exclusive and are developed as the research progresses (Willig, 2001). Thus, the combination of a focus group and Grounded Theory methodology can be seen as extremely useful in allowing the beliefs and opinions of participants to be revealed.

The research question for this study was 'How do young people use different communication media in their social lives?' The format of this question is in line with recommendations by Willig (2001), who felt that the question used in a Grounded Theory investigation should identify but 'not make assumptions about the phenomenon of interest' (p.36). Background literature has not been reviewed in relation to this section of the thesis, because this should not be used to inform the direction of the research when Grounded Theory is used. Theories should be entirely driven by the data.

## **Method**

### **Participants**

Two groups of undergraduates from the University of Durham, Queen's Campus, Stockton-on-Tees were recruited for participation in two focus groups. Their ages ranged from 18 to 20 years. There were seven participants in the first group, who had SIAS scores ranging from 18 to 37, with a mean score of 28.1. There were also seven participants in the second group, with SIAS scores ranging from 4 to 16, with a mean score of 11.9. Thus, shyer individuals were together in one group and less shy individuals were in another group. The rationale behind this was that shyer people might be more likely to talk about issues associated with social anxiety in the presence of others of a similar nature rather than if they were surrounded by those who were more extravert. Likewise, those who were less shy would not dominate the conversation too much if surrounded by others who were similarly inclined. In each group six of the participants were female and one was male. Although

it is acknowledged that it might have been beneficial to have more males in the groups, it was not possible to recruit these.

### **Data Collection**

The data were collected through two audio taped focus group sessions which were conducted at the researcher's university. These lasted for 50 minutes each and addressed the research question above. Participants were asked to discuss their use of communication media in their social lives and were generally allowed to take the conversation wherever they wanted it to go as long as it remained relevant to the issue being discussed. The tape-recorded focus group sessions were transcribed verbatim.

### **Data Analysis**

The abbreviated version of Grounded Theory (as described by Willig, 2001) was employed for data analysis in this study, as opposed to the full version. That is, this study worked with the original data using coding and constant comparative analysis (the principles of Grounded Theory) to develop themes, but further data were not collected as the study progressed. This was because time constraints would not allow the full version of Grounded Theory to be used. Data were analysed using the computer software program NUD.IST version 4, which allowed categories to be identified that were relevant to the research question. When this chapter had been written it was emailed to those who participated in the focus group sessions for their comments, in case they felt that they had been unfairly represented. However,

no comments were received. It is hoped that this indicates that the participants were happy with what is included in this chapter.

### **Ethical Issues**

The study was approved by the University's ethics committee and participants were informed that they would not be identified in any documentation arising from the study, that they would not be pressurised to talk about any issues that they did not feel comfortable in discussing and that anything they did say would not be attributed to them outside of the confines of the session.

### **Results**

The categories described below emerged from analysis of the focus group data. There tended to be considerable overlap between the issues that the shy and less shy groups discussed. Therefore, it seemed to make sense to describe the categories that emerged from both focus groups in conjunction in this section. Comments made by participants which are illustrative of categories are included below, and it has been noted whether these came from participants in the shy or less shy groups, so that the reader can see the level of overlap for him or herself.

#### **Category 1: Frequency of use**

Definition: Participants described how frequently they used various communication media.

## **Instant Messenger**

One participant stated that he did not use instant messenger, but most indicated that they used it frequently, many almost every day. Some participants indicated that they used instant messenger for sessions that lasted hours at a time, or that their instant messenger program was constantly running, with it only being switched off on rare occasions when the computer was turned off. However, one participant qualified this by stating that although she might always be online, this did not mean that she was always chatting. Two participants indicated that instant messaging and text messaging (which is discussed next) were their two most-used forms of communication.

## **Text Messaging**

The extent to which text messaging was used varied quite widely between the participants. For example, at one end of the scale, one individual stated that she sent about 600 texts a month, and another described how she sent and received around 50 or 60 messages a week. Another participant stated that she received 300 'free' texts a month, but that she probably only used about 25 or 30 a week. Similarly, another female participant said she sent around 100 texts a month. However, one participant stated that she did not text very much, another stated that she sent only 10 messages a week and yet another stated that she sent only around five a week. One female also stated that she used to use text messaging a lot more when she was at home before she started university, but that now the use of instant messenger had generally taken the place of this. One can see that as different communication media are introduced, the popularity of others may change amongst young people.

## Email

Many participants indicated that they checked their email account every day, but some stated that they did this rather less frequently. A male participant stated that he had two email accounts, a 'university' one and a personal one, and that he only checked the university one every day. Other descriptions of the extent of email use included one offered by a female participant who indicated that she checked her email account quite frequently, and that she used email much more than instant messaging programs. One reason for this was that her parents did not use instant messenger as they were at work and so she preferred to email them. This female participant also stated that she wrote many pages of emails every day, and that she used email more than any other form of communication:

Participant: I probably write more in my emails than in my essays!

(Laughs)

(General laughter)

Interviewer: (Laughs) OK, then would you say you use emails more than...

Participant: ...than anything else, yeah.

*(Extract taken from lower-shy group transcription).*

However, another female participant indicated that since she had started using instant messaging programs, her use of email had been much lower. In addition, one male participant indicated that he did not use email very much at all.

## Voice Calls

One participant indicated that she did not communicate using landline phone calls very much because students at the university did not have much access to landline telephones. In general, many of the participants indicated that they never rang people, although one or two described how they might sometimes receive phone calls. A female participant stated that she got her parents to use an instant messaging program rather than making phone calls to them, although sometimes her mother would make a telephone call to her. This participant also indicated that since she had started using MSN messenger, she phoned people much less:

Interviewer: ...Do you think that because some of these forms of communication exist, that you use others less?

Participant: Yeah, definitely.

Interviewer: OK, so which ones?

Participant: Like the phone. I mean I did used to like ring people a lot when I was younger, you know when I was like 13, 14, 15, before like I had a mobile phone and stuff, and before like when I had MSN, I used to ring people quite a lot, but then, as soon as I got MSN, I just started, I got all my friends on that...

*(Extract taken from lower-shy group transcription).*

## **Letter Writing**

A small number of participants stated that they occasionally wrote letters to people.

## **Category 2: Who is communicated with?**

Definition: Participants discussed who they used different communication media to interact with.

## **Internet communication in general**

Participants indicated that they used the Internet to communicate with people that they already knew. No one stated that they met new people online. In fact, participants tended to feel that people who did meet others online were either younger than them or even strange in some way:

Interviewer: ...do you just use the Internet generally to talk to people you already know, or is it to meet people online as well?

Participant 1: Just people I already know - I think people who meet others online are a bit weird.

Interviewer: OK. (laughs). I don't if anyone's going to say now...  
(laughter),

Interviewer: ...but does everyone have a general agreement that it's usually just for people that you know already..?

(general noises of agreement)

Participant 2: I think occasionally, like when I was younger, it was different...

*(Extract taken from higher-shy group transcription).*

### **Instant Messenger**

Most participants stated that they used instant messenger to talk to their friends, such as those at other universities, or to check if friends close by were going out for the evening. One individual stated that she spoke to her mum using an instant messaging program.

Other participants also stated that they used instant messenger to communicate with people who were very close by, even in other rooms of the same house. This was so that participants did not have to go to the effort of changing location to talk to them face-to-face.

It was stated that one advantage of instant messaging was that unlike many other forms of communication it allowed the individual to talk to many people at once:

Participant 1: And you can talk to more than one person at the same time...

Participant 2: Yeah exactly, they can all join the conversation as well, so it's good, it's entertaining as well...

*(Extract taken from lower-shy group transcription).*

A female participant discussed the use of an instant messaging program which had a voice function, but she indicated that she only used this for very

short messages to other individuals in her house. She stated that for long conversations she would tend to use the typing function.

### **Text Messaging**

A few participants stated that they would send someone a text message simply if they were bored and wanted to pass the time. That is, there did not have to be any special purpose for sending a message. Many people said that they would tend to text people to arrange a night out. A couple of participants stated that they would text someone they had not seen in a while rather than phoning them, especially if they were unsure about how much they had to say:

Participant: Not so much my good friends, but sort of more you know friends that you haven't spoken to for a while for one reason or another, but they're not particularly close close, and you're not really sure how much you have to say...

Interviewer: OK, so you'd send a text rather than make a phone call... OK, why's that?

Participant: Because you get to kind of think about it, and you don't really have to think of constant conversation... I can't stand it - I have one friend and she goes silent, and sometimes I can't stand that, I have to keep constantly talking...

*(Extract taken from higher-shy group transcription).*

There was also some evidence that text messaging was used in conjunction with other forms of communication media. For example, more than one participant stated that they would text someone to see if they were available to receive a phone call, a female participant stated that she might text someone to come online and use instant messenger, and another female participant stated that she would send someone a text message if she received an email from them but did not have time to reply straight away. Finally, as with instant messaging, more than one participant stated that they might use a text message to contact someone in another room of a house if they did not want to make the effort of going to speak to them face-to-face.

## **Email**

Participants indicated that they often used email to communicate with those who were geographically distant. For example, one participant with relatives abroad stated that she used email to communicate with her family and another indicated that he used email when he was on holiday to communicate with people at home. However, as with instant messenger, email was also used to communicate with those in close proximity. For example, one participant stated that she used email to send documents to other people in her house, for example, if they were all working on the same essay and wanted to compare their work.

## **Chat Rooms**

Participants generally indicated that they had only really used chat rooms when they were a few years younger. Many seemed to indicate that they felt it

would not be appropriate for them to visit chat rooms at their current age. A couple of participants had stories from when they were younger about how they, or friends of theirs, had had face-to-face encounters with people that they had originally met on the Internet. For example:

Participant 1: One of my friends actually ran away with someone off the Internet. We'd organised a night out, like a big group of us. She phoned and cancelled last minute, she was supposed to be staying at my house, and I was like, all right, fair dos, I'll just see you later. And the next morning I got a phone call off her mam, and she was like, "ah, [name of Participant 1], is she at your house, cause I'm waiting for her?" I said "Oh she didn't come out with us last night." She went, "She did, she went all dressed up with her bags packed to stay over..." And I was like "Nah, she didn't..." It turned out she'd got the National Express at like 11 o' clock, went down to London, and she's still there now...

Interviewer: She's still there now...? And, sorry, when did she go...?

Participant 1: It was about a year ago...

Interviewer: About a year ago..? So she met this guy, and just stayed with him ever since...?

Participant 2: Is she alive now?

Participant 1: Well, I hope so...! (laughs)

*(Extract taken from higher-shy group transcription).*

## **Voice calls**

One participant stated that he would use a voice phone call rather than a text message if he needed to get in touch with someone straight away. Another stated that he would use a voice call if he wanted to catch up properly with a contact's news, or if a friend was upset. The same participant stated that he would also tend to use the phone to arrange a night out. Finally, one participant stated that she would only use a voice telephone call for a situation in which the recipient could not send a text message for some reason.

## **Letter Writing**

In general, participants indicated that they tended to write letters only occasionally to specific individuals, such as people who were much older than them or people who did not use communication technology. For example, a couple of participants stated that they wrote to grandparents and ex-teachers:

Interviewer: So, do the rest of you send letters then?

Participant 1: I mean I used to have this tutor, this really traditional guy, very eccentric and he just kind of said that a letter is so much more traditional and so much more... more personal and so I used to send him...

Interviewer: OK, so do any of the rest of you send letters then?

Participant 2: To my grandparents...

*(Extract taken from higher-shy group transcription).*

Similarly, one female participant wrote letters to her friend at home who did not have a computer.

### **Category 3: Control over interactions**

Definition: Participants discussed the level of control over interactions that they felt various communication media afforded them.

#### **Instant Messenger**

Instant Messenger seemed to be regarded positively in terms of control, first because some programs allow users to choose whether or not they want to communicate with contacts even before a conversation has started. For example, one of the most popular instant messaging programs, MSN Messenger, allows users to 'block' their contacts from seeing that they are online, meaning that there is no necessity for users to engage in dialogue with those that they wish to avoid.

It was also indicated that instant messaging was useful in terms of control because it permits one to see whether or not other users are available for communication. One can show that one is available to converse using MSN messenger. The telephone was compared unfavourably to instant messenger in this regard because one does not know when someone phones someone if they really wish to talk at that time or not.

Participants also liked the fact that instant messaging gave one control over a conversation if one took place. For example, participants indicated that if their communication partner needed clarification about what they were saying whilst they communicated on instant messenger, then this could be

requested immediately. It was argued that this was not necessarily the case with other forms of communication, such as text messaging and email, and that this could sometimes cause misunderstandings which led to ill-feeling.

Another benefit of instant messaging, in terms of control of the interaction, that was described was that one could leave gaps in conversation without inducing sensations of awkwardness. In this regard, instant messaging was compared favourably to phone conversations, which participants felt suffered from the fact that one could not have a break in conversation without feeling uncomfortable.

Participants also liked the fact that one could conceal the truth relatively easily when using instant messaging, especially when talking to casual acquaintances. In particular, participants felt that they could effortlessly disengage themselves from a conversation by stating that they had something else to do, even if this was not really the case. Participants indicated that this was perhaps easier when using instant messaging than when using the telephone. In fact, one participant stated that if she did not desire to speak to someone at all, it was easy just to turn the computer off mid-conversation, whereas a similar action was not possible with the telephone.

Participants also liked instant messaging programs because they felt that they allowed them to control what they said in an interaction, particularly when this might be of an emotional nature. For example, the following participant described how MSN messenger gives her time to think about her responses in what could otherwise be more heated exchanges via other communication media or face-to-face:

Participant: '... like I'll be telling them what the problem is and they'll respond and I'll have time to think about it, and I'll do it calmly. I mean you can't just scream at them and then storm off...'

*(Extract taken from lower-shy group transcription).*

Another reason given for the increased level of control that was felt when communicating via instant messenger was the fact that it allows one to retract what one is about to say by deleting text before it is submitted to the other person or people involved in the interaction.

Participants also indicated that the use of emoticons in an instant messaging conversation helped to control the way that the message being transmitted was perceived. In particular, participants stated that emoticons could change the meanings of statements to show that they should not be taken seriously.

There were however, negative issues associated with the level of control that one has over instant messaging conversations. For example, this medium was sometimes compared unfavourably with email for discussions of an emotional nature. One participant described how email allowed her to communicate her point fully before a response was given, whereas instant messaging programs did not necessarily have this attribute:

Participant: ...because if they talk to me on MSN, they've got a way of responding before I'm done with what I want to say, whereas if I

send an email, I can rant and rant and rant for like 3 or 4 pages and then they send one back saying, 'yeah ok'..!

*(Extract taken from lower-shy group transcription).*

It was also described how instant messaging could result in some misunderstandings of message intent. In particular, it was described how sarcasm could be misunderstood. However, participants indicated that if this was the case, at least confusion could be resolved relatively quickly.

On another less positive note, it was felt that emoticons did little to help the communication of serious messages with instant messaging, and that really, the sole benefit of these was for jovial communication. Another function, which allows one to 'nudge' the communication screen of one's associate on MSN messenger, was also described unfavourably by one of the participants, who stated that she found it annoying.

### **Text Messaging**

One positive aspect of text messaging in relation to control of communication was the fact that one would not interrupt someone by sending them a text message. It was also described how the cost of the communication could be controlled when sending text messages, because these are of a fixed rate. Voice calls were compared unfavourably to text messages in this regard, because one cannot control the cost of them easily.

It was also indicated that text messages could be employed when the person being communicated with was not very well acquainted with the individual sending the message:

Participant: Not so much my good friends, but sort of more, you know, friends that you haven't spoken to for a while for one reason or another, but they're not particularly close close, and you're not really sure how much you have to say.

*(Extract taken from higher-shy group transcription).*

This statement illustrates how this particular participant found that sending a text message to someone she did not know very well allowed her to control the length of the interaction she would be required to engage in. Similarly, another participant stated that text messaging could be used to circumvent making a voice call to communicate with contacts that lacked social skills. Furthermore, as with instant messaging, participants felt that text messages were a useful communication medium because they gave one more time to think about responses to questions. Finally, participants felt that one could usually expect a prompt response with text messages, whereas this was not always the case with other communication media. In particular, participants felt that one could often wait for a much longer time for a response to an email.

As with instant messaging, a negative issue associated with control of how text messages were interpreted was that these could be taken the wrong way in regard to sarcasm. It was also stated that on occasion, it was possible to send a message to the wrong person. An example given by one participant was that they might be thinking about someone other than the recipient when they sent a message, and that this could result in it being sent to that

individual rather than the intended person. Furthermore, participants indicated that they believed a response might not be received immediately if someone had misinterpreted the meaning of a text message, which could lead to misunderstandings and ill feeling.

## **Email**

As stated, email was viewed as useful for conducting potentially heated dialogues as it allowed the full expression of a point of view before a response could be made. The quote below illustrates this point further:

Participant: I get very emotional when I talk to people about things that I feel and I think that quite often if I speak to somebody face to face, I go over the top and I end up saying things that I don't actually mean and I don't know why I said them. Whereas in an email, I can control it, say what I want to say, try and justify what I want to say and make it a proper argument with a beginning, middle and an end...

*(Extract taken from lower-shy group transcription).*

This participant developed her point further by saying that email was useful in arguments as it allowed her to revise contentious statements made in disputes if, on reflection, she considered them unwarranted. However, less positively, it was again stated that where email was concerned, misunderstandings could not be resolved quickly.

Furthermore, as with instant messaging, it was felt that emoticons did little to help communicate serious subjects.

### **Voice Calls**

No participants indicated that the use of a voice call could increase the level of control they felt they had over an interaction. Rather, it was indicated that voice calls were associated with decreased levels of control. For example, one individual felt that one had to continually provide conversation when making a voice call as any gaps in the discourse could produce feelings of discomfort. Voice calls generally seemed to be viewed as events in which the technology itself rather than the communicators control the amount of dialogue that is produced:

Participant: And talking on the phone, like you have to constantly talk, whereas with MSN, you can have like little breaks and stuff, you don't always have to have something to say. You don't have the awkward silences.

*(Extract taken from lower-shy group transcription).*

### **Letter Writing**

There were no negative issues associated with control over interactions and letter writing. However, a positive issue in regard to the level of control one has over interactions with the use of letters was described in the focus groups. It was stated that letters were useful if one wanted to communicate with someone without disturbing them at an inopportune moment:

Participant: Again, it's that whole thing where you don't want to disturb someone, I'd always send a letter...

*(Extract taken from higher-shy group transcription).*

#### **Category 4: A substitute for face-to-face contact**

Definition: Participants indicated that they used some forms of communication technology as a substitute for face-to-face contact, and they described the positive and negative aspects of doing this.

#### **Internet and mobile phone communication in general**

In general, participants did not feel that the use of any of the forms of communication technology discussed reduced the amount of time that they spent interacting face-to-face with their friends and family. Rather, they suggested that this was increased because different types of communication media allowed them to stay in touch with people that they would otherwise have lost contact with.

The levels of intimacy that participants felt could be achieved by the use of different communication media are discussed in more detail under the following category. However, in regard to the present category, one issue that arose was that participants felt that although Internet communication could sometimes be perceived as less personal than face-to-face contact, this was compensated for by the fact that some people sometimes discussed more intimate issues online than they would feel comfortable doing face-to-face:

Participant: I don't know, it depends on who you're talking to, cause some people find that although it's less personal, they can say more to you on the Internet than they can to your face, in which case you end up getting closer to people because you chat to them on the Internet as opposed to... face-to-face you would probably never get anywhere with them...

Participant 2: But don't you think that's because it's less personal? Like, if you're face-to-face with someone you get embarrassed, you think, oh, I can't really say that, but MSN, for some reason...

Participant 1: But it gets you closer to them personally.

Participant 2: Yeah... that's true, yeah...

Participant 1: I mean, it isn't as nice and personal as face to face, but some people make it more personal by opening up a lot.

Interviewer: So... so you're saying that it feels less personal when you're talking but you get more from people because of that?

Participant 2: Yeah

Participant 1: Some people, yeah.

*(Extract taken from lower-shy group transcription).*

## **Instant Messaging**

It was indicated that a positive issue in regard to using instant messaging as a substitute for face-to-face contact was that this medium made it easier if one wanted to communicate something of a negative nature. The following quote illustrates this:

Participant: ...like I was angry at my friend the other day, and I didn't want to say anything to his face, so I said it to him over MSN, and he was like can we not just talk about this? And I was just like, no let's talk about it over MSN (laughs).

*(Extract taken from lower-shy group transcription).*

Similarly, this participant described how she used MSN to end a relationship with someone she had been seeing, because she felt that his behaviour would be too challenging for her to cope with if she did this face-to-face.

Other participants felt that instant messaging encouraged them to keep in contact with those that they might lose touch with under other circumstances, such as those that they would not usually see face-to-face. For example, some of one participant's friends were at other universities, and so she used instant messenger to contact them:

Interviewer: ...the people who use it every day then, who do you talk to?

Participant: My best friend. People from school.

Interviewer: OK, does it tend to be people who aren't from the local area, like people from school and stuff like that...?

Participant: Yeah...

*(Extract taken from higher-shy group transcription).*

Another participant used instant messenger to see if his friends were available to meet face-to-face, and still another felt that the use of instant messenger actually encouraged her to meet up with her contacts:

Participant 1: No, I think it does the opposite with me, like, erm, like last night for example, I was really bored, so I was talking to my friend [name of friend], who's at this uni, and we like decided over MSN to meet up, so it was just like you know, really kind of like...

Participant 2: Well, I suppose in that kind of situation...

Participant 1: Well, yeah, 'cause we were just like chatting...

Participant 2: Because if you weren't chatting you would never have decided to go over?

Participant 1: Yeah.

*(Extract taken from lower-shy group transcription).*

A number of participants indicated that they did not feel that instant messenger was always appropriate for talking about 'serious' issues. One participant stated that this was because she felt that in these situations, the person she was communicating with might benefit from experiencing her emotional response to the situation. Similarly, another participant stated that it was important for her to observe visually how other people reacted to what she had to say:

Participant: I think I wanna see a person when it's a serious thing. I think it's cause I'm, I dunno, I'm sensitive to how other people view

me, so if, like, say it was a serious conversation, I'd want to talk to them and see how they'd react.

*(Extract taken from lower-shy group transcription).*

Finally, one participant stated that the use of instant messenger did not encourage her specifically to engage in face-to-face contact with her acquaintances.

### **Text Messaging**

One negative issue associated with using text messaging as a substitute for face-to-face contact was discussed. This was that in an emotional situation, one could not necessarily tell if the individual one was communicating with was distressed or not:

Participant: And someone can pretend they're absolutely fine and be sitting there in tears.

*(Extract taken from higher-shy group transcription).*

### **Email**

The issue described under 'Category 1: Control over the interaction,' which concerned the use of email in heated situations in order to control the dialogue, obviously also relates to using email as a substitute for face-to-face contact as well.

## **Category 5: Intimacy**

Definition: Participants discussed how personal, or intimate, they found certain communication media to be. Sometimes a high intimacy level was considered a positive attribute and sometimes this was viewed more negatively.

### **Instant Messenger**

Participants indicated that they sometimes liked instant messenger because it was less personal than other forms of communication. As discussed under the last category, it was considered that instant messaging could encourage those communicated with to reveal more about themselves. One participant also mentioned, however, that instant messaging was not as 'nice and personal' as face-to-face communication. This indicates that it was not in every situation that the young people preferred to communicate using instant messenger, and that face-to-face contact still had its merits for them.

### **Text Messaging**

It was stated that although text messaging could be somewhat impersonal, it was at least more personal than email. This was because the message goes directly to the recipient's phone and also because strangers do not tend to send text messages to people that they do not know, whereas they do with SPAM email.

Participants also indicated that text messages could sometimes successfully communicate emotional issues, and so in that sense are intimate. For example, the following participant described how a change in the type of

information an individual usually sends via text message can indicate that he or she is unhappy:

Participant: ... you can understand more about a person, because if a person normally replies with a lot of information, and you're asking her how is she, and she always says fine, you think something must be wrong...

Interviewer: Right, ok, so sometimes it is necessary to say something...

Participant: Yeah, like I think sometimes you can make indirect sort of inductions about something...

*(Extract taken from higher-shy group transcription).*

Despite the fact that the participant above indicated that text messaging could communicate emotions in some instances, he also averred that if an acquaintance was experiencing an emotional disturbance, something more than a text message would be necessary to deal with the situation:

Participant: If a friend was upset, you're not going to text them and say... sort it out!

*(Extract taken from higher-shy group transcription).*

Text messaging thus may not have been seen as being as intimate as some other methods of communication by some of the participants.

Furthermore, despite the fact that the individual described above felt that a text message was more personal than an email, another participant considered that they were roughly equal in this regard.

### **Category 6: Effects of use on other activities**

Definition: Participants discussed whether or not the use of communication media had any effect on how frequently they engaged in other activities.

#### **Instant Messenger**

Some participants felt that the use of instant messaging programs did not stop them from engaging in other activities, because chatting using these can be carried out simultaneously with other pastimes such as, for example, watching the television. Also, participants made the point that instant messaging programs could be left idle and returned to at leisure if the user wanted to go away and do something else for a while. In addition, as well as conversing, participants indicated that instant messaging programs allowed them to play online games with others, or use different facilities on the computer whilst engaged in conversation. Voice calls were compared unfavourably with instant messaging because these were viewed as a form of communication for which time had to be specially set aside, and during which no other activity could take place:

Participant: And talking on the phone, like you have to constantly talk, whereas with MSN, you can have like little breaks and stuff,

you don't always have to have something to say... don't have the awkward silences.

*(Extract taken from lower-shy group transcription).*

### **Text Messaging**

One participant indicated, jokingly, that without the use of text messaging he might get more exercise as he would spend more time walking to different rooms in his accommodation to talk to his housemates face-to-face, rather than just sending them a message from his mobile phone.

### **Email**

A female participant described how in her accommodation, she and her friends emailed each other pages of documents, for example, if they were discussing a university report that they were all completing at the same time. This was instead of going to each other's rooms to talk, and the participant stated that this might reduce the amount of exercise they all took.

### **Category 7: Associated Emotions**

Definition: Participants discussed how the use of different communication media made them feel.

### **Text Messaging**

One participant described it as a 'buzz' to receive a text message, and other participants discussed the emotions associated with receiving a text message in even more favourable terms:

Participant 1: I don't know about anyone else but my little ring tone I've got associated with texts just gives me like a little bump in my heart. I'm like "Ooh!"

Generally: (noises of agreement)

Participant 2: It does make you feel important, yeah that's true.

Participant 1: It's a lovely noise... You get all depressed if someone doesn't text you back. You think, "Oh, no one loves me!"

*(Extract taken from lower-shy group transcription).*

Another participant also stated that receiving a text message made her feel appreciated.

### **Voice Calls**

Participants were not always so positive about the emotions that they experienced when they received a voice telephone call. They generally agreed that they felt a sense of sickness if one of these was received late at night, but also that they only got this sensation when a landline phone call rather than a mobile phone call was received. Participants did not fully explain why this was the case but it seemed to be mainly because they feared that a landline phone call at such a time might contain important news as the person was phoning at an unusual hour.

## **Letters**

Letters were generally viewed positively in terms of the emotions that they engendered. Participants liked to receive letters, and one participant stated that this was because they made one feel appreciated because they were something to 'occupy you'!

## **Category 8: Etiquette**

Definition: Some participants indicated that they felt that there was etiquette to using certain communication media.

### **Instant Messaging**

Instant messaging did not receive a great deal of attention in relation to matters of etiquette. However, comments made by a female participant indicated that she felt that people should write out words fully when instant messaging, rather than using abbreviations.

### **Text Messaging**

Text messaging received rather more attention in terms of matters of etiquette. For example, a female participant objected to the brevity of some of the text messages that a friend of hers sent. This participant also objected to the fact that her friend tended to abbreviate words and did not use punctuation when sending her messages. These were also issues that were discussed by other participants. For example, another female participant stated that she found it annoying when her mother texted her using

abbreviations and still another felt that it was nice for people to end their text messages with 'kisses' (i.e. 'x's).

In terms of replying to text messages, one participant felt that this was necessary only if a direct question was asked, but other participants disagreed:

Participant 1: You don't always have to reply if it's not a question. I only reply if they actually ask me a question...

Participant 2: Yeah you do.

Participant 3: You do!

Others: You do!

Participant 4: I don't like people who think, apart from me, you don't have to reply.

Participant 3: I mean like...yeah

Participant 2: Like even if it's "thanks, see you later," or something.

Participant 3: Yeah

Participant 2: "...OK," if it's "ok", I'm happy.

Participant 3: Like, "Hey I'm coming here in a bit, I'll see you in a bit", I would reply, say, "Ok, see you in half an hour", you know... or say like you text and say "Hey [name of Participant 3], how are you doing?", something really random, "How boring was the lecture today?" I'd always reply and say, "Yeah, it was very very dull."

(Laughs).

*(Extract taken from lower-shy group transcription).*

One female participant, perhaps only jokingly, stated that others should always have their mobile phones at hand to respond to communication immediately. Some participants considered it bad manners to put 'TB' at the end of a text message, which means 'text back.'

## **Email**

Participants tended to indicate that they did not feel that there was much etiquette involved in emailing. A couple of participants agreed that it was acceptable never to reply to an email, although also thought that perhaps this might not be the case with emails which were personal. One reason that participants did not always reply to emails was that they felt that if someone sent a long message, then there was a necessity to respond with one which was equally long. Therefore, they preferred sometimes just to neglect to reply:

Participant: If it's a short email, like a paragraph, then I'll pretty much respond straight away. If it's just like me saying yeah, I'm fine, hope you're ok, see you soon - then I will reply. But if they've wrote some huge bloody long essay thing, I get halfway through and I get bored of it. I come back to it later, I finish the rest and I can't be bothered to write back then, so I'll wait when I can be bothered and I just write something little, that's just like 'yeah, ok', you know just like, that's based on this huge thing, I'm just like, 'yeah ok'...

Interviewer: So, do you feel that if someone writes a lot, there's a... necessity to write a lot back?

Participant: You have to write a lot definitely.

*(Extract taken from lower-shy group transcription).*

A female participant stated that she would text someone on occasion to let them know that she had received their email.

### **Letter Writing**

Participants generally tended to indicate that there was a definite etiquette involved with letter writing. A few participants stated that they would always reply to a letter.

### **Category 9: Conversational aspects of communication media**

Definition: Participants felt that some communication media are conversational in nature. That is, they felt that communicating via certain forms of technology is rather like having a chat with someone. Where this was the case, it was viewed positively.

### **Instant Messaging**

As might be expected, instant messaging was generally considered conversational in nature, and it was indicated that this was because you can get an immediate response when using it. One female participant indicated that she liked this aspect of instant messaging because the feedback she received in an interaction made communication easier:

Participant: 'It's a conversation, it's the fact that you're having a conversation with them, and so like, you don't feel like you're just writing paragraphs and paragraphs of just (indecipherable) and trying to think of something to say, it's like you're responding to them, it's a conversation.'

*(Extract taken from lower-shy group transcription).*

### **Text Messaging**

One participant indicated that she felt that text messages could be used to transmit more than very brief messages. She felt that text messaging could be conversational in nature, describing it as 'chit-chatty'.

### **Category 10: Health Issues**

Definition: One participant discussed health issues associated with mobile phones.

### **Voice calls**

A female participant indicated that she felt that if she used her mobile phone for voice calls for as much time as she used other forms of communication, then brain damage was a possibility. However, this was not a subject which received a great deal of attention and, apart from this comment, the participant in question did not seem especially concerned about this issue.

## Discussion

Some of the comments made by the participants in the focus groups could be seen as indicative that young people sometimes use communication media to manage self-presentational concerns, or anxieties associated with how they will be perceived by others in social situations. In particular, comments discussed in the 'control over interactions' category could be viewed in this way, such as participants stating that they used email, instant messaging and text messaging to help manage their temper in disagreements, or to communicate in socially awkward situations. However, comments relating to concern with self-presentation were not limited either to the shyer or less shy group in particular (indeed, many of them were made by the less-shy group). If these findings are viewed in conjunction with the quantitative evidence discussed in the last chapter of this thesis, this may suggest that whilst shyness as a psychological characteristic is not an especially important determinant of whether young people use the internet and mobile phones for communication purposes, young people of any disposition might sometimes use the internet to manage situations that promote temporary, or transient, social anxiety. Further discussion of shyness viewed as both a state (situational shyness) and a trait (a relatively stable psychological characteristic) will be included in the final chapter of this thesis.

However, this is not to say that the control category describes nothing more than control of social anxiety. Young people also indicated that they used internet and mobile phone communication to control

aspects of social interactions that were not related to self-presentational concerns, such as to control financial expenditure on a communication, or to control when an interaction took place. Therefore, the issue of control using mediated communication in general will receive further attention later in this discussion.

The results can also be related to shyness because one participant made a comment which could be viewed as providing ecological validity for Argyle's (1965) intimacy-equilibrium theory which was used in the last chapter to account for why shy people seemed to use instant messaging, chat rooms and text messaging as much as other people. This participant stated that communication via the internet is not 'as nice and personal as face to face, but some people make it more personal by opening up a lot' (page 222). As has been described, intimacy-equilibrium theory states that people have an optimum comfort level for intimacy during an interaction, and that an increase in one form of intimacy should result in a corresponding decrease in another in order for equilibrium to be reached. As social presence is reduced when using the internet or text messaging to communicate, according to intimacy-equilibrium theory, people should be more likely to discuss personal information using these media as they will still be able to maintain a comfortable level of intimacy. It can be seen that this participant's description of how some people seem to use the Internet for communication is certainly congruent with this theory. In addition, other research has also reported that people often disclose more about themselves when using the Internet to communicate as compared to face-to-face (Parks and Floyd, 1996; Bargh, McKenna and Fitzsimmons, 2002).

To move on to a discussion of categories unrelated to shyness: instant messaging, text messaging and email were discussed most by the participants, which supports the findings reported in earlier chapters of this thesis that these are the most popular forms of communication technology amongst young people. (By contrast, for example, newsgroups were not mentioned at all). Instant messaging and email were used by participants to communicate both with those who were geographically close (even in the same house) and with those who were geographically distant (for example, those in other countries), and also to communicate with those at in-between distances (for example, to arrange nights out with local contacts). This supports observations made by Baym (2002), as described earlier in this thesis, that the Internet reduces geographical constraints on communication. Text Messaging was often used by participants just to pass the time, and sometimes in conjunction with other forms of communication technology, such as to quickly state that an email had been received. Text messages were also sent to those who were both geographically close and distant. Chat rooms were not popular at all amongst this group of young people, which supports findings reported in Chapter 5 that this communication medium is less popular than instant messaging, email or text messaging. Participants seemed to value letter-writing, but only did this on rare occasions and often to older people or those who did not have access to communication technology. Landline phone calls did not seem to be popular amongst the participants at all. However, this may in part have been because many were in university halls of residence in which access to landline phones was limited. Nonetheless, in general, voice calls, either by landline or mobile phone,

seemed much less important to participants than other communication media. The use of these tended to be restricted to rare situations in which participants wanted a lengthy conversation to catch up with major events in a friend's life, if immediate contact was required, or if other communication media were not available.

Participants did not seem to indicate that the use of communication technology reduced the amount of time that they spent engaging in other activities. This supports one of Woolgar's (2002) five rules of virtuality that 'virtual technologies supplement rather than substitute for real activities' (p.16). Furthermore, Internet communication in general was used to talk to people that the participants already knew – meeting new people online or conversing with strangers did not seem to be popular at all. It was interesting to note that issues of identity manipulation which have been described as relevant to young people's use of the Internet for communication by Baym (2002), Orleans and Laney (2000) and Tapscott (1998) (see Chapter 2) did not receive any attention from the participants. The participants used in the present study may have been too old to consider manipulating their identities online an attractive pastime.

Text messages and letters induced positive emotions in the participants, but landline voice calls tended to produce negative emotions. Participants tended to opine that there was a clear etiquette to using certain forms of communication media, in particular text messaging, instant messaging and letter writing. Participants also tended to feel that some forms of communication technology were more conversational in nature than others,

especially instant messaging and text messaging. Health issues associated with mobile phones did not receive much attention from participants.

To return to the 'control' category: this can perhaps be seen as the 'core' category that emerged from the data, and so it will now be discussed in some detail. This category indicates that a significant reason for young people's use of communication technology might be that it affords them control over interactions. In this regard, instant messaging tended to be viewed positively, for various reasons such as the ability to see if specific individuals were available to communicate, the ability to talk to many people at once, immediate clarification of ambiguous statements, the ability to leave gaps in conversations, the ability to conceal the truth, the management of emotional interactions and the use of emoticons to elaborate the meanings of statements. However, one or two negative aspects associated with control of interactions using instant messaging were discussed; including the fact that people could interrupt in an argument, that message intent could be misunderstood, and that emoticons were only useful when joking.

As well as instant messaging, text messaging also tended to be viewed positively in terms of the level of control it afforded interactions. For example, participants indicated that the use of text messages allowed them to control interactions in terms of their financial cost, which supports findings reported by Grinter and Eldridge (2001) and Livingstone and Bober (2003) as described in Chapter 2. In addition, text messages permitted reduced interactions with those whom participants did not know very well or had little to say. This also supports findings reported by Grinter and Eldridge (2001). Text message communication also allowed participants time to think about their responses to

messages and encouraged others to deliver prompt replies to messages. However, negative issues in regard to control with text messaging were that comments could be misunderstood; especially those of a sarcastic nature, and that messages could also be sent to the wrong person.

Email was also generally regarded positively in terms of control as participants felt that it was useful to control heated dialogues. However, a negative issue in regard to control with this medium was that misunderstandings could occur and could not necessarily be easily rectified. Letters were also viewed positively in terms of control as they allowed participants to communicate with other people without disturbing them. Voice calls were not viewed positively because it was felt that with these, breaks in conversation were not possible.

In general, comments made by participants indicated that they felt that the use of many text-based Internet and mobile phone communication media, (but not voice calls), often gave them time to think about how best to articulate themselves, especially in emotional situations. They also made comments, (especially related to the 'conversational aspects of communication media' category) that some text-based Internet and mobile phone forms of communication could be quite conversational in nature. These descriptions of the characteristics of communication media can be related to the concept of communication synchronicity, which has been described, for example, by Joinson (2003) and McKenna and Bargh (2000). Communication media are described as synchronous if the exchange of information is very rapid, such as with the use of the telephone to make voice calls. They are described as asynchronous if the speed of interaction is much slower, such as in letter

writing. It is sometimes difficult to describe modern communication technologies as either synchronous or asynchronous, as this may depend on the way in which they are used. For example, if text messaging takes place slowly between users, this may be considered an asynchronous form of communication, but if it takes place rapidly, then it might be considered synchronous. In any case, what is important is the fact that because some communication technologies such as email, text messaging and instant messaging can be used asynchronously as well as synchronously, they allow one time to stop and think before giving a response if this is desired, or, alternatively, allow one to retain the conversational nature of interactions if this is preferred. The participants were clearly aware of this and found that these affordances gave them greater control over interactions than they would have if, say, communicating via the telephone or face-to-face which are necessarily synchronous. It is probably no coincidence that the types of communication technology that were the most flexible in regard to synchronicity: instant messaging and text messaging, seemed to be favoured most by the focus group participants. Voice calls seemed to be reserved for lengthy conversations to catch up with major events in friends' lives, or if immediate contact was required. In regard to the former use, it is speculated that this might be because they offer greater social presence than text-based Internet and mobile phone communication media.

The finding that young people sometimes used text-based Internet and mobile-phone communication asynchronously in order to control their social interactions echoes findings made by other researchers of CMC, especially those discussed by J.B. Walther. For example, Walther (1995) explored the

effects of computer conferencing on relational communication and argued that asynchronous CMC often promotes positive relational effects as compared with traditional media because it allows users to respond to messages at their own convenience, unlike other forms of communication which oblige members to be co-present. In fact, Walther (1995) discussed these results from the point of view of organisational behaviour, but it can be seen that his assertions are also relevant to the findings reported in the present chapter. For example, the focus group data suggest that young people valued the fact that instant messaging reduced time constraints on their communication and allowed them to enter in and out of conversation whilst engaged in other activities. This might well have promoted social interactions that were lengthier and less superficial.

Walther and Burgoon (1992) also reported a comparison of asynchronous computer-conferencing and face-to-face communication and argued that the former condition fostered 'selective self-presentation and relational behaviour(s)...' (p.79). It can be seen that this point of view is congruent with data from the present study, which indicated that young people used asynchronous communication media when they wished to present their opinions as adeptly as possible during emotional exchanges. Indeed, Walther and Burgoon (1992) argued that using asynchronous communication modes, 'one may plan, contemplate, and edit one's comments more mindfully and deliberately than in the more spontaneous, simultaneous mode' (p.79).

Research has also suggested that, along with asynchronicity, the lack of social cues inherent in some forms of computer-mediated communication might allow users to control their self-presentation, and this might also be a

reason why the young people who participated in the focus groups seemed to indicate that text-based Internet and mobile phone communication afforded them control over their interactions. For example, Kiesler et al. (1994) argued that the lack of nonverbal tools available in CMC makes it difficult for someone to exercise dominance in a communication message, and this might have benefited some, (perhaps less dominant?), young people who indicated that they liked to use Internet mediated communication for arguments.

Furthermore, Walther (1996) argued that it is easier to manage the impression one makes using CMC than face-to-face because social information is often conveyed almost entirely via language in the former situation, which is easier to control than the non-verbal behaviour that would also be on display in the latter situation. Burgoon and Walther (1990) also asserted that another benefit of the lack of physical cues present in CMC is that the sender may allocate increased cognitive resources to the construction of a message, whereas in face-to-face communication he or she must attend to 'heightened levels of psychic, sensory, and emotional involvement and arousal, increased cognitive load, competing conversational and relational demands, [and] differential salience of context cues' (Burgoon and Walther, 1990, p.258). This may be another reason why the young people found the use of text-based Internet and mobile phone communication beneficial to social interactions.

The issue of how control is related to young people's social interactions should be investigated further so that young people's communication preferences can be more fully understood. Questions for research that come to mind are: to what extent does the amount of control that a communication medium affords a social interaction contribute to its use by young people?

Also, in what situations are communication media that afford the user control over the interaction employed, and what aspects of control over interactions are most important to young people? In regard to the latter question one could ask, for example, is control important only in emotional discussions, or is it important to young people in more trivial dialogues as well? Another question might be: in which situations is control over the dialogue less important than say, greater social presence, when, for example a phone call might be used? Or, when do other factors become more important to a dialogue than control over the communication situation? These questions need careful consideration as the answers to them would provide society with valuable information about the best way to communicate with young people.

To move onto another issue: the data from the focus groups also suggested that the ways in which young people use communication technology are often in keeping with Rational Actor theory. That is, the participants indicated that they made deliberate choices of which types of communication media to use based on how the characteristics of the technology would suit the specific needs of the situation, rather than the technology dictating how they communicated. For example, they chose to use email or instant messenger to communicate when they were angry, as it allowed more control over the interaction than a face-to-face confrontation; they chose text messaging when they were concerned that they did not have much to converse about; and they used email to communicate with those who were geographically distant because it does not have a financial cost attached to it. This supports a point made by Taylor and Harper (2003) that when new technologies are adopted they become part of an existing social context, and

this may often be what shapes their use rather than the technology itself shaping behaviour. The focus group data also support the conclusion that the small positive correlations between measures of use of the Internet and mobile phones for communication, described in Chapter 2, indicate that young people may be Rational Actors in regard to their use of communication technology.

### **Criticisms of the Grounded Theory Approach**

The Grounded Theory methodology used in this study will now be considered in terms of its appropriateness to this field of research.

Ideally with Grounded Theory methodology, the data are supposed to 'speak for themselves.' That is, this methodology tends to take a positivist stance to theory generation, assuming that there is one, concrete, truth available to the researcher. The idea is that categories should emerge from the data, without the researcher imposing a hypothesis on them or making assumptions about them. However, in practise, Grounded Theory has been criticised by claims that the researcher cannot be completely neutral, and that one version of the truth is not all that is available. That is, it is argued that the researcher always brings a point of view to the analysis of the data. Willig (2001) cites Dey (1999) who states:

'Even if we accept the (doubtful) proposition that categories are discovered, what we discover will depend in some degree on what we are looking for – just as Columbus could hardly have

“discovered” America if he had not been looking for it in the first place.’ (p.45)

However, the present Grounded Theory study was encouraged by previous research described in this thesis, whose prime focus is whether social anxiety conditions are associated with young people's use of the Internet and mobile phones. Despite this, the present study has produced data that relate to much more than this specific subject. Therefore, it cannot be said that the data have simply revealed what was being looked for.

It has also been argued that Grounded Theory is not always a suitable method for psychological research in particular. This is because originally it was designed specifically to study social processes and generate theories about them. For example, Willig (2001) has argued that one can question its validity for the study of experience. She stated that when Grounded Theory is applied to questions of this nature, it is ‘reduced to a technique for systematic categorization’ (p.46), and does not necessarily result in the creation of a theory.’ However, in the present piece of psychological research, the data from the focus groups have not only been categorised, but the categories have allowed the researcher to theorise, for example, that ‘control’ is an issue which might be of great relevance to young people's use of communication technology. Thus, for this study Grounded Theory has been used as much more than just a categorising system.

## **Conclusion**

This chapter supports Chapter 5, which concluded that social anxiety as a psychological characteristic may not be a significant predictor of which young people are likely to use the Internet and mobile phones for communication purposes. This is because the shy group of participants used in this study did not tend to discuss issues associated with mediated communication that were very different to those discussed by the less-shy participants. However, participants from both the shy and less shy focus groups did discuss issues that indicated that they sometimes used Internet and mobile phone communication to manage interactions that might otherwise provoke 'state', or situational, social anxiety.

In addition, the research reported in this chapter indicated that a major determinant of why young people do like to use certain forms of text-based communication technology, such as instant messaging and text messaging, may be because these allow them to control interactions (both in relation to self-presentation and other factors). One important way that these media afford young people such control is by being flexible in terms of communication synchronicity.

## **Chapter 7**

### **Conclusions arising from the Thesis and Final Discussion**

This chapter will conclude this thesis, by discussing the strengths and weaknesses of the research methodologies used, the major findings of the thesis and their implications, and also potential avenues for future research.

#### **Limitations of the thesis**

One criticism that could be levelled at the design of the questionnaires used to investigate young people's use of the Internet and mobile phones in Chapters 2 and 3 of this thesis, is that the question 'Do you use the Internet?' may have had different meanings to various participants answering the question. For example, it could have meant 'Have you ever used the Internet?', 'Do you use the Internet frequently?', or 'Do you use the Internet through your own choice?' to different individuals. The main aim of this question was to investigate whether or not young people classified themselves as 'Internet users' in their own terms – that is, did they consider themselves users of the Internet in a general sense. Furthermore, participants were also asked for how many hours a week they used the Internet, which meant that degree of Internet use was assessed in another, less crude, way. Nevertheless, it is acknowledged that this term could perhaps have been better defined, especially as differences in the definitions of use employed by different

organisations can mean that it is difficult to compare results from different surveys. For example, the ITU (International Telecommunication Union) subscribes to the definition of an Internet user as someone aged 2 years old and above, who went online in the past 30 days. By contrast, the US Department of Commerce defines Internet users as those 3 years or older who 'currently use' the Internet (again, this is not a very clear definition). In addition, the CNNIC (China Internet Network Information Centre) defines an Internet user as a Chinese citizen, aged 6 or above, who uses the Internet for at least one hour per week. Finally, NUA state that an Internet User is a person with access to the Internet, but that does not necessarily hold an Internet Account. Where NUA only has figures for Internet Account holders, this is multiplied by a factor of 3 to give the number of Internet users. As can be seen, there are a great many ways of defining what it means to 'use' the Internet, and so in hindsight it is considered that it would have been useful for the questionnaires used in this thesis to provide a definition of the term in order to make results more meaningful.

Another flaw of the questionnaires reported in Chapters 2 and 3 is that children may not have understood some of the questions. The questionnaires were designed to complement those undertaken by the Office for National Statistics for adults so that data might also be useful for anyone who wished to compare the results of adults with those of children in the future. However, it is accepted that younger children may have had difficulties in understanding some of the terms used in questions, and in hindsight it would probably have been beneficial to

have rephrased these questions in simpler language. In particular, children might have had some difficulty with the question regarding sources from which they discovered new websites and web pages. Options for this question that young people might not have understood include: 'via hyperlinks from other web pages', 'Internet search engines', 'Internet directories', and 'Usenet groups'. It would have been useful to have made the meaning of these options clearer to young people, either by describing them in simpler terms, or by providing examples of what each of them meant, for example, 'Internet search engines such as 'Google'/'MSN'/'Yahoo'.

It could also be argued that in attempting to make questions complement those asked to adults by the Office for National Statistics, some options were included which were not really relevant to young people. For example, an option for the question 'For what purposes do you use the Internet?' included: 'buying or ordering goods/tickets and services'. It might be argued that many children would be unlikely to use the Internet for this purpose, as they would not possess the requisite credit or debit cards for Internet commerce, and so this option should either not have been included, or perhaps should have been replaced with a purpose of Internet use more relevant to young people. However, a considerable minority of children did indicate that they used the Internet for this purpose (16.6 percent for the paper survey and 34.2 percent for the online survey) so this might suggest that even if children did not make internet purchases themselves, their parents may have acted as 'agents' in using the Internet to make purchases for them.

Another purpose for which it might rightly be considered that young people would be unlikely to use the Internet was 'looking for work'. As the children who answered the questionnaire were, for the main part, too young to work, this question might not have been relevant to many of them, and it could be argued that this should have been replaced with another, more pertinent question. However, it should be remembered that some of the sixteen year olds who answered the questionnaire might have used the Internet to look for work. Finally, the options 'personal banking/financial/investment activities' and 'using or accessing government or official services' could have been removed from the questionnaire as these activities are not relevant to most children.

It is also acknowledged that important omissions were made from the list of purposes of Internet use that could be selected in the paper survey, especially 'Instant Messaging', and 'playing games'. However, these uses of the Internet were often described in the 'other options' of the paper questionnaire, and so were incorporated in the online version. Although instant messaging in particular was much less popular amongst young people in early 2002 (when the paper survey was conducted) than today, this is still an important oversight. It is also considered that whilst the questionnaire was circulated amongst local professionals for their comments when it was first created, another useful exercise might have been to have had an initial focus group session with young people aged 11 to 16, in order to find out what uses

of the Internet were important to them, thereby informing better initial design of the instrument.

Another shortcoming of the survey research is that the context of completion of parts of it is unknown. For example, in the case of the online survey, it is not known whether respondents answered the questionnaire at school or at home, or indeed whether internet access was available to the pupils at the schools, and how this might have affected results. In addition, it is not known to what degree young people were supervised when they completed the online survey, which may also have had an impact on the quality of the results, for example by encouraging some respondents to answer untruthfully. It is known that the paper survey was completed by young people in class, but as teachers themselves often administered and collected questionnaires in many cases, the full context of completion cannot be specified. For example, one cannot be sure that the participants were not rushed, or that they were made to feel at ease to ask questions about any aspects of the questionnaire that they did not understand. Fortunately, for the questionnaire used to investigate associations between social anxiety conditions and use of the Internet and mobile phones, the author was present for all data collection, and so ensured that the conditions in which data were collected were reasonably similar, and advantageous, in all cases.

An issue which makes interpretation of the correlations regarding social anxiety disorders and use of the Internet and mobile phones for communication purposes difficult is that no baseline measure of the size

of young people's existing social circle was calculated in the research. In fact, this was one reason why it was initially difficult to determine a directional hypothesis in regard to whether socially anxious young people would use mediated communication more, or less often, than those who were not socially anxious. That is, it might have been the case that socially anxious people would use the Internet and mobile phones more often than other young people for communication purposes because of a reduction in social anxiety that they felt when using these media to interact. However, it might also have been the case that socially anxious young people would use the Internet and mobile phones less often than others for communication purposes because this condition would lead to them having a smaller existing social circle. Indeed, the fact that many of the correlations relating social anxiety conditions to frequency of use of the Internet and mobile phones for communication purposes ultimately turned out to be small, or non-existent, may have been because any increase in the use of mediated communication due to the presence of social anxiety could have been offset by the fact that socially anxious young people might have had fewer contacts than non-socially anxious young people in the first place. This is particularly the case because, as both Livingstone (2003) and focus group data from this thesis have indicated, ICTs tend to be used by young people to communicate with their existing social contacts, of which socially anxious young people would be likely to have fewer. Although it was argued in this thesis that, in fact, in many cases socially anxious young people communicated as much as anyone else using

mediated communication; in hindsight, it would have been beneficial to have included a baseline measure of young people's existing social circles so that it could be judged whether or not socially anxious young people used mediated communication more than non-socially anxious young people once these were taken into account.

Another possible weakness of the methodology used to collect data in this thesis is that reliance on the use of questionnaires was quite heavy, and this can be criticised on a number of grounds. First, questionnaires are unverified self-report measures. The possibility of response biases has already been discussed in this thesis, so it is difficult to know how well the data collected from the questionnaires actually match up with how young people use the Internet and mobile phones in their daily lives. Decades ago, Lapiere (1934) reported that behaviour cannot necessarily be predicted by attitudes, and so it may be the case that the way that respondents claimed that they acted would not necessarily predict how they acted in reality. It would be useful for future research to collect other measures of young people's Internet and mobile use, perhaps using diary methodology, to see if these are congruent with survey data. Diary responses might be more difficult to exaggerate as a greater level of detail about Internet and mobile phone use would need to be provided. Obviously, diaries have their own practical limitations, for example it may be more difficult to recruit participants as diaries take longer than questionnaires to complete. Nevertheless, collection of such data would be useful to support survey data. For the purposes of this thesis, however, it was felt that a survey

was the best method of collecting a large amount of data about opinions and behaviours regarding the Internet and mobile phones cheaply and quickly.

A second criticism of questionnaires in general is that these can lead the researcher to ask particular questions which may not cover what really are the important issues in regard to the field of research. That is, the theorist's presuppositions guide the work and participants do not get the opportunity to refute theories (e.g. May, 2001). This criticism may be especially relevant because the author has already described how certain purposes of Internet use were omitted from the initial design of the questionnaire. However, it is hoped that the fact that non-survey methods were used later in this thesis addressed this problem to some degree. For example, Grounded Theory was used to analyse the data collected from the focus groups reported in Chapter 6, and it is hoped that this gave young people the opportunity to discuss issues relevant to the use of mobile phones and the Internet that were important to them.

Questionnaire data are also sometimes criticised for focusing on measurement to the detriment of meaning and understanding. Therefore, it is hoped that the inclusion of qualitative focus group data in this thesis also meant that the context in which young people use the Internet and mobile phones has not been ignored, although it is accepted that the data from focus groups cannot necessarily be generalised due to the small sample sizes used.

Another problem with the survey data collected for this thesis is that much of it may now be out of date, especially that which was

collected when research first commenced. As has been stated, the types of functions for which young people use the Internet and mobile phones can change very rapidly and it is perhaps likely that the functions for which young people use the Internet and mobile phones will have changed since the surveys for this thesis were conducted. Nevertheless, the surveys remain valuable because even if one cannot be certain whether each piece of data is reliable on its own, taken together they may suggest a broad picture of young people's Internet and mobile phone use that may be more reliable over time. For example, whilst instant messaging may have overtaken chat rooms in terms of its importance to young people, one can still see that communication in general is an important aspect of Internet use for young people. In addition, whilst interest in playing games and downloading music on the Internet may fluctuate amongst young people, one can still see that in general they are interested in use of the Internet for entertainment purposes. In addition, efforts were made to publish the findings from the surveys reported in Chapters 2 and 3 quickly as it was foremost in the researcher's mind that making them available quickly would maximise their usefulness (Madell and Muncer, 2004a; Madell and Muncer 2004b; Madell and Muncer, 2005).

The thesis can also be criticised because it is acknowledged that not all forms of Internet and mobile phone communication have received attention. For example, Internet communication might also include auction sites and multi-user games and mobile phone communication might also consider picture and video messaging. However, it is

considered that the most popular forms of Internet and mobile phone communication: email, instant messaging, chat rooms, text messaging and voice calls, have been considered in some detail.

### **Achievements of the thesis**

Having discussed the limitations of the thesis, this chapter will now summarise its major findings and the implications of these. The first achievement of the thesis is that it has provided a general description of many aspects of young people's use of the Internet and mobile phones. The paper survey reported in Chapter 2 indicated that 83 percent of the young participants considered themselves Internet users. (For reasons discussed earlier in this thesis, the figure representing percentage of Internet users from the online survey is likely to be less representative of young people in general). The functions of the Internet that were indicated to be most popular amongst young people by both the paper and online surveys included playing or downloading music, general browsing or surfing and using email. As well as these three purposes, the online survey also indicated that 'playing games' was a popular use of the Internet by young people. This option had not been included on the paper survey, although participants often included it under self-described 'other purposes'. Along with use of the Internet for email, the use of chat rooms and sites was a social function of the Internet that was indicated to be fairly popular amongst young people by both the paper survey and the online survey. Furthermore, use of the Internet for instant messaging was indicated to be a popular communication function by the

online survey. Again, this option had not been included on the paper survey, but had been frequently indicated as a purpose of Internet use under self-described 'other purposes'.

The paper survey also indicated that a sizeable minority of participants (17 percent) did not consider themselves to be Internet users. A lack of access to facilities seemed to be the most reasonable explanation for the young people's non-use of the Internet, given that options associated with this factor were often endorsed by non-users on the paper survey and because non-users also indicated that they did not have a computer at home more often than users. Similarly, Nachmias et al. (2000) found that accessibility to the Internet from home influenced young people's use of the Internet most. The findings regarding non-use of the Internet from the paper survey were probably more reliable than those from the online survey because a greater number of Internet non-users participated in this. Whether the findings relating to non-use of the Internet by young people reflect a national situation is hard to say. This is because although the sample used in the paper survey was representative of the UK's population in terms of ethnicity, it may not be representative in other ways. For example, as has been described, the North-East of England (where the paper survey was conducted) had a lower percentage of households with access to the Internet than the rest of the country in 2001. The extent to which findings from the paper survey are applicable to wider populations may be a question for future research.

The paper survey also revealed that there may be something of a bias towards male use of the Internet, in terms of amount of use and competence. This was supported by the results from the online survey

described in Chapter 3 and is therefore an issue that should be investigated by future research. This finding is congruent with research reported by D'Haenens (2001) and Nachmias et al. (2000) who both found biases towards male use of the Internet in Israel, and is also congruent with research described by Durndell and Haag (2002) who found a bias towards male use of the Internet in Romania, and Schumacher and Morahan-Martin (2001) who made a similar finding in the US. However, these findings are not congruent with those reported by Odell et al. (2000) and Jackson et al. (2001) who did not find gender gaps in Internet use amongst US samples.

Both the paper and online surveys indicated that boys may be more likely than girls to use the Internet for playing or downloading music and buying or ordering goods, tickets and services, and that girls may be more likely to use the Internet for educational purposes. These findings support those made by other survey research (for example Wesier, 2000; Odell et al. 2000 and Durndell and Haag, 2002). In addition, both surveys also indicated that males were more likely than females to use the Internet for accessing government or official services and for general browsing or surfing. Much other research has also indicated that females may be more likely than males to use the Internet for email than males (Jackson et al., 2001; Odell et al., 2000; Pew Internet and American Life Project, 2000, Sherman et al., 2000; and Weiser, 2000). However, whilst the paper survey produced results that were congruent with these, the online survey did not.

The paper and online surveys also indicated that mobile phone use is extremely popular amongst young people, with 86.0 percent of the sample stating that they owned a mobile phone in the paper survey. (This figure was higher for the online survey, but may be less reliable as the positive correlations between measures of Internet and mobile phone use described in Chapter 2 of this thesis indicate that Internet users may be more likely than non-users to be mobile phone owners). Something of a gender bias towards female use of mobile phones was also revealed by the surveys, which is congruent with findings reported by the Childwise Monitor Survey (Winter 2003-2004). Secondary school-aged girls were more likely than their male counterparts to indicate that they were mobile phone owners by both the paper and online surveys. The surveys also showed that text messaging (in particular) and making and receiving calls were extremely popular uses of mobile phones amongst young people, although accessing the Internet was found to be unpopular. This is congruent with findings reported by Haste (2005) and the Childwise Monitor Survey (Winter 2003-2004).

The small but significant positive correlations (Table 2) between measures of use of the Internet and mobile phones for communication purposes reported in Chapter 2, combined with data from the focus groups may suggest that communication technology itself does not determine how young people communicate with one another but that they themselves decide how to use this technology strategically to meet their own social needs. In this regard, this thesis suggested that 'Rational Actor' Theory, as described by Kling (1980) and Markus (1994)

(cited in Joinson, 2003) may be especially relevant to young people's use of communication technology. The correlations also indicate that young people use different forms of communication technology alongside one another, and this finding is congruent with research reported by Smoreda and Thomas (2001) earlier in this thesis. It was also argued in Chapter 2 that the positive correlations between the frequency of young people's use of the Internet and mobile phones for communication purposes might have been achieved because there are certain types of 'technologically competent' young people who, in general, are confident in their ability to use technology for social interaction. However, it might also be speculated that the positive correlations were achieved because some young people have larger social networks than others. That is, the correlation between extent of Internet and mobile phone use by young people may have been caused by a third variable, being the size of the respondents' social circle. In fact, data from later chapters of this thesis might support this second explanation to some degree. For example, socially anxious young people (who might be assumed to have smaller social circles than non-socially anxious young people) were found to use the Internet for email and to receive mobile phone calls slightly less often than non-socially anxious young people. However, shy people did not indicate that they used chat rooms and sites, made mobile phone calls, or used their phones for text messaging any less than non-shy people, which does not support the 'fewer social contacts' explanation. Perhaps the small positive correlations between use of the Internet and mobile phones for

communication purposes can therefore be best explained by a combination of the 'technological competence' and 'size of social network' arguments.

The rationale for undertaking the surveys reported in Chapters 2 and 3 of this thesis was to provide a broad sociological perspective of how young people use the Internet and mobile phones in their daily lives. Therefore, one might reasonably ask the question: how successful were the surveys in achieving this aim? It is considered that, on the whole, the surveys were fairly successful. Whilst attempts to investigate the impact of ethnicity on young people's use of the Internet and mobile phones produced limited results, as few respondents in categories other than 'white' participated in the surveys, the surveys did allow gender issues to be discussed at some length. Most notably, it was suggested that, along with access, gender might be one factor which is important in determining young people's use of the Internet and mobile phones in the UK. It is maintained that the influence of gender should continue to be studied given the results of the surveys which suggest a bias towards male use of the Internet and female use of mobile phones.

One can also consider the findings regarding gender in relation to those concerning social anxiety, which were discussed later in the thesis. These will be discussed in their own right shortly. However, for now, one might argue that because social anxiety was not found to be highly associated with young people's use of the Internet and mobile phones, gender may be more important than social anxiety in determining differential use of the Internet and mobile phones by young

people in the UK. Furthermore, whilst it is suggested that social anxiety can cause young people to use the Internet and mobiles to manage self-presentational concerns, it is certainly not argued that the amount which a young person uses the Internet or a mobile phone could be used to predict whether or not he or she is socially anxious, as was debated in the introduction to this thesis.

It is also the case that a consideration of findings relating to social anxiety in conjunction with those concerning gender might cause one to wonder if psychological characteristics in general are less important than sociological characteristics in determining differential use of the Internet and mobile phones. It is difficult to know if this is likely to be the case: whilst some authors have suggested that individual differences in extraversion, neuroticism, psychoticism, locus of control and self-esteem might be associated with how people use the Internet (for example, Hamburger and Ben-Artzi, 2000; Amiel and Sargent, 2004; Swickert et al., 2002; Flaherty et al., 1998; Joinson, 2004; Engleberg and Sjöberg, 2004, as described in Chapter 1), other research has suggested that psychological characteristics are not very important in this regard (Bonebrake, 2002). Perhaps it may be the case that sociological research can be best employed to investigate broad differences in people's use of modern technologies, and that psychological research can be best employed in attempting to understand the finer nuances of people's Internet and mobile phone-related behaviour. Indeed, it may be the case that because these technologies have infiltrated so many

people's lives, and are used so frequently by them, that psychological characteristics have become less important in predicting their use.

In regard to social anxiety specifically, the research from this thesis supports that conducted by Harman et al. (2005) and Gross et al. (2002), as described in Chapter 1, who also indicated that overall levels of Internet use were not related to shyness. They are also congruent with findings reported by Peris et al. (2002), Scealy et al. (2002) and Bonebrake (2002) who argued that shyness was not associated with use of the Internet for communication. However, the data do not support findings reported by such authors as Papacharissi and Rubin (2000), Ward and Tracey (2004), Yuen and Lavin (2004) and Nishimura (2003) who all stated that social anxiety was positively related to use of the Internet for communication purposes, nor does it support research conducted by Chak and Leung (2004) who reported that shyness negatively predicted use of chat rooms. (The data, could, however, be said to support Chak and Leung in that they suggest that social anxiety may be negatively related to use of email). The findings from this thesis are also incongruent with those reported by studies which suggest that loneliness is related to Internet use, for example Hamburger and Ben-Artzi (2003) and Morahan-Martin and Schumacher (2003). Nevertheless, it is not argued that findings from studies which disagree with those presented in this thesis are wrong for a number of reasons. First, different studies have employed samples which are incomparable with those used for the research reported here, such as Internet dependents in the case of Yuen and Lavin (2004), or undergraduates in the case of

Ward and Tracey (2004). Secondly, other studies sometimes measure types of Internet use that are different to those measured in this thesis, such as whether participants are involved in online relationships in the case of Nishimura (2003). Finally, other studies may measure constructs like loneliness which are similar, but not identical to social anxiety, making comparison difficult.

This thesis also found that social phobia does not prevent young people from using the Internet either generally or for communication purposes. This finding supports the theory suggested by Shepherd and Edelman (2001) that online interaction might be less anxiety-provoking for socially phobic individuals than 'real-world' interaction. Participants with symptoms of social phobia were just as likely as those without these to use the Internet for email and instant messaging, and were more likely to use the Internet for chat rooms.

The findings reported in this thesis also suggest that social anxiety and social phobia are not strongly associated with mobile phone use amongst young people. This supports research by Prezza et al. (2004), as discussed in Chapter One, who argued that mobile phone use is not related to loneliness. In addition, these results support Fortunati and Magnanelli's (2002) claim that text messaging may make socialising easier for some young people.

In general, the findings of this thesis do not support research which suggests that those who use the Internet are socially withdrawn (for example, Kraut et al., 1998; Nie and Erbring, 2000) as shyness as a psychological characteristic and social phobia were not strongly

associated with the extent of use of the Internet and mobile phones either generally, or for communication purposes. However, the lack of association did indicate that shyness and social phobia are not a barrier to the use of these technologies (especially in the cases of instant messaging, chat rooms and text messaging). Theories which suggested why this might be the case were discussed in Chapter One, and included social presence theory (Short et al., 1976), intimacy-equilibrium theory (Argyle and Dean, 1965), Reduced Social Cues models of CMC (Kiesler et al., 1984), and the self-presentational theory of social anxiety (Leary, 1986). It was also considered that anonymity might be an important factor, as well as deindividuation in the case of chat rooms.

In summary, then, the following hypotheses made in Chapter One were not supported by data collected for this thesis:

- *Participants with social anxiety will use the Internet more than those without this condition.* In fact, no correlation between whether or not participants stated that they used the Internet and social anxiety scores was found. In addition, the number of hours per week that participants stated that they spent using the Internet was negatively correlated with social anxiety scores.
- *Participants with symptoms of social phobia will use the Internet more than those without these symptoms.* There was no significant difference between participants with and without symptoms of social phobia in terms of whether or not they stated that they used the

Internet, and in the number of hours per week for which they stated that they used the Internet.

- *Participants with social anxiety will use the Internet to communicate more than those without this condition.* There was actually a negative correlation between the frequency with which participants stated that they used the Internet for email and social anxiety scores, and no correlation between the frequency with which they stated that they used the Internet for either chat rooms/sites or instant messaging, and social anxiety scores.
- *Participants' with symptoms of social phobia will use mobile phones to communicate less than those without these symptoms.* There was no difference between the group of participants who possessed some symptoms of social phobia and the group who did not possess these symptoms in terms of how frequently they stated that they used their mobile phones for any of the communication purposes examined: making calls, receiving calls, and text messaging.

In addition, there was only slight support for the following hypotheses:

- *Participants with symptoms of social phobia will use the Internet to communicate more than those without these symptoms.* Participants with symptoms of social phobia indicated that they used the Internet for chat rooms and sites slightly more often than those without these

symptoms. However, there was no difference between participants with and without symptoms of social phobia in the frequency with which they stated that they used the Internet for email or instant messaging.

- *Participants with social anxiety will use mobile phones to communicate less than those without this condition.* There was a small negative correlation between the frequency with which participants indicated that they used their mobile phones for receiving calls and social anxiety. However, there was no correlation between social anxiety and use of mobile phones to make calls and use of mobile phones for text messaging.

Despite the fact that quantitative data suggested that social anxiety and social phobia as psychological traits were not strongly associated with use of the Internet and mobile phones for communication purposes, focus group data nevertheless suggested that transient, or situational, social anxiety might encourage young people to employ mediated communication to manage occasional, awkward or difficult, social interactions. In addition, focus group data suggested that 'control over social interactions' in a general sense, might be an important reason for young people's use of the Internet and mobile phones for communication purposes, and this supported research by Walther (1995, 1996) and Walther and Burgoon (1990, 1992). Whilst there is clearly some overlap between the idea of control over social interactions in a general sense, and management of social anxiety in

particular, it is suggested that the former concept is larger than, and subsumes the latter. For example, control in a general sense might include management of finances associated with communication or management of the speed of response to a communication.

It was argued that one major reason that text-based Internet and mobile phone communication media can offer control may be their flexibility in terms of synchronicity. For example, the focus group data suggested that participants often used text-based Internet and mobile phone communication synchronously for conversational-style interactions, and asynchronously if they wished to have time to think about how to articulate themselves. Data indicated that one reason that voice calls may not always be as well-liked as text-based Internet and mobile phone communication is because these are necessarily synchronous.

The focus group data also indicated that young people tend to use communication mediated by the Internet or mobile phones for social interactions with existing contacts. That is, neither the shy nor less shy groups indicated that they used Internet or mobile phone communication to develop new friendships. This does not support the 'social compensation hypothesis' reported by Gross et al. (2002) which suggested that the Internet would be used most by people who are lonely and socially anxious to talk to those with whom they are not well acquainted. The data from the focus groups also support arguments made by such authors as Katz and Aspden (1997), Franzen (2000), Kraut et al. (2002) and Livingstone (2002), as described in Chapter 1,

which suggest that the Internet may support traditional social connectivity rather than undermining it. That is, focus group participants indicated that they had remained in contact with those who they might otherwise have lost touch with, rather than stating that they had lost 'offline' friends because they used Internet and mobile phone communication media.

The various results relating to social anxiety from the quantitative and qualitative parts of this thesis prompt debate about whether or not shyness is best viewed as a transient 'state', or a more stable temperamental quality, that is, a 'trait'. Asendorpf (1986) has defined state shyness as a 'transient, situation-bound affective state encompassing experiential, motor-expressive, and physiological components' and has defined dispositional shyness as 'a temporarily stable tendency of a person to react with situational shyness in a broad class of situations.' Mischel (1968) argued that shyness should not be considered a trait because it can be shown that someone who is shy in one situation will not necessarily be shy in another. The data from this thesis certainly support the argument that shy people are not necessarily shy in all situations because the correlations reported in Chapter 5 of the thesis indicated that those who would be considered shy, as measured by Mattick and Clarke's SIAS, communicated using instant messaging, chat rooms, and text messaging just as frequently as those who were non-shy. However, this evidence does not suggest that shyness cannot be viewed as a personality trait because most psychologists would argue that personality variables should not have to predict behaviour across all

situations in order to remain generally useful constructs, and we know from causal observation that people seem to differ in the frequency and degree with which they experience social anxiety. Furthermore, Crozier (2001) has argued that shyness can be viewed as a construct of personality, because inhibition can appear early in life, is stable over time, produces predictable patterns of reactions, and has evidence of a biological basis. (One should note that inhibition is not necessarily the same as shyness as it can be viewed as a characteristic that is evident in children's behaviour such as crying, withdrawal and timidity (Kagan, Snidman and Arcus, 1993), whereas shyness may contain elements of self-consciousness, self-evaluation and concern about the opinions of others (Crozier, 2001). However, Crozier (2001) suggested that it is possible that early appearing inhibition might predispose an individual to shyness).

This thesis takes the view that shyness can be usefully viewed as both a trait and a state. We all know people who seem to possess a general quality of shyness in most situations, and similarly we all know people who are usually outgoing but can be reserved and withdrawn on certain occasions. Research from this thesis suggests that shyness viewed as a trait is not highly correlated with who does and does not use Internet and mobile phone communication media: this conclusion can be drawn from the correlational evidence reported in Chapter 5. However, the focus group data in this thesis do suggest that young people, either shy or non-shy in general, might sometimes use different types of

Internet and mobile phone communication technology to manage situations that are likely to provoke transient, or situational social anxiety.

To conclude this discussion of the achievements of the thesis, the Introduction stated that it was hoped that research would suggest some positive ways in which communication technology is used by young people in their daily lives. This aspiration was expressed, in part, because it was hoped that positive findings would counter some of the more negative attention that use of the Internet and mobile phones by young people has received from the press. For example, the issues of pornography, violent material, paedophilia, and children copying schoolwork were described in relation to Internet use in Chapter 1. In addition, negative issues in relation to the use of mobile phones have also emerged in the popular media. For example, the phenomenon of 'happy slapping' (which is the use of mobile phones by young people to film clips of other young people being assaulted by members of their peer group) is lately receiving much press attention (Akwagyiram, 2005; Hongisbaum, 2005). So, does this thesis suggest that the Internet and mobile phones can be used productively and positively by young people? The answer to this question must surely be an unequivocal 'yes'. Much of the data, and especially that from the focus groups reported in Chapter 6, suggested that communication technology encourages positive, expressive relationships between young people and their social contacts, especially when interactions of an emotional nature are required. Questionnaire data also indicated that young people use the Internet and mobile phones for a variety of important functions, including socialising, seeking information, and educating and entertaining themselves. In general, there was much support for the idea that

the Internet and mobile phones are beneficial and rewarding technologies which allow young people to meet many of life's difficult challenges, especially those relating to interpersonal relationships.

Furthermore, the introduction to this thesis suggested that the ways in which young people use the internet and mobile phones is an important issue to consider because communication behaviour impacts social groups, which in turn can influence adolescent behaviour in terms of delinquency (Hudson, 2004) drug taking (Chen, 2003), dating and sexual behaviour (Harper et al., 2004) and conflict (McMullen, 2004), to name just a few examples. However, rather than data from this thesis suggesting that use of the Internet or mobile phones by young people produces negative effects in regard to these issues, they suggest that these technologies could be used by organisations whose aim is to improve the welfare of young people in regard to these concerns. For example, it could be argued that services which offer face-to-face or phone-based counselling to young people, such as Childline, might benefit from an Instant Messaging modality, as some young people in the focus groups indicated that they were more comfortable discussing socially sensitive issues via this medium. In addition, the findings which suggested that young people might sometimes appreciate text messages as a communication medium, because they restrict content to brief, specific information, might have implications for how various educational, health or political groups disseminate their material to young people. In conclusion, one can see that it is a distinct possibility that the application of findings from this thesis, concerning young people's appreciation and manipulation of communication

technology, could be applied to real life settings and have a positive impact on young people's development in many ways.

### **Directions for Future Research**

This chapter will now discuss how future research into the topic of social anxiety and young people's use of the Internet and mobile phones might proceed. A topic that might receive more attention by future research is how the Internet and mobile phones could be used to treat social anxiety disorders. A few studies investigating this topic do exist, but more research is necessary. For example, the use of the Internet to offer text-based counselling to help those who might find it difficult to access face-to-face counselling has been discussed by Schopp (2004). Schoop suggested that those with social phobia might employ email correspondence and instant messaging to obtain support. This is perhaps the most immediately obvious method by which one might consider that the Internet or mobile phones could be used to help those with social phobia, but other methods have also been discussed.

Bishop (2003) discussed how mobile Internet technology could be used to deliver information about a social situation to individuals with social phobia, in order for individuals with this condition to improve their social skills. Specifically, Bishop discussed an electronic system which translates idioms, aphorisms and common phrases into more comprehensible expressions, along with a suggested response. It is suggested that this could help those with social phobia if they have accrued social skills deficits because of an avoidance of social

situations. However, as Bishop himself suggested, this intervention would probably only have limited success with the treatment of social phobia, as the problem at the source of this condition is really inhibition caused by anxiety and perhaps the overly-negative interpretation of comments, rather than a lack of understanding about social situations. Furthermore, the use of such a system would require the individual using it to be engaged with the system rather than with the interaction with which they should be involved. This could actually reduce rather than increase the interaction's quality.

Nevertheless, Internet and mobile technology might be used to treat social phobia more frequently in the future. For example, Botella, Hofmann and Moscovitch (2004) developed a telepsychology program that can be self-applied through the Internet to treat the fear of public speaking (<http://www.Internetmeayuda.com>). This is a condition that can be viewed as similar to social phobia as it involves a fear of scrutiny. The program includes scenarios that are played via the Internet, such as business meetings and a socialising with groups of friends, that the user must confront during his or her treatment. Botella et al. made the point that treatment programs such as this are more economical and flexible than face-to-face treatments and that the use of technology in this way allows those who might not otherwise access treatment to have it available to them. In addition, receiving treatment online allows those who experience mental health issues to avoid the stigma associated with seeking professional psychological help.

Another way in which technology could be used to treat social phobia was indicated by Klinger et al. (2005). They discussed how virtual reality technology could be used to treat social phobia by graded exposure to simulations of social situations in virtual environments. Perhaps if virtual reality technology becomes commonplace in the future, such simulations may even be made available via Internet and mobile technology to those who need them.

It may also be worthwhile for researchers to consider how the Internet and mobile phones impact social anxiety. It may be that use of the Internet and mobile phones has detrimental effects on social anxiety. For example, Kraut et al.'s (2002) 'rich-get-richer' hypothesis which indicates that extraverts are likely to employ the Internet to improve their existing social networks, whilst introverted people lose offline contacts suggests that those people who are least skilled at socialising will only become worse if they continue to use the Internet to communicate. One can also see that this theory could be extended to mobile phone users.

However, it could be that the use of the Internet or mobile phones for communication purposes by shy young people affords them a chance to practice and improve their communication skills using non-threatening media, and, ultimately the improvement in communication skills could transfer to offline situations, as will be explained shortly. It may also be that far from reducing the frequency with which young people communicate, mobile phones and the Internet actually afford communication where otherwise none would have existed. For example, if an adolescent is only comfortable in discussing an emotionally

sensitive issue via the Internet one could argue that this is better than if he or she had not communicated about the issue at all. In many cases, it may be that young people feel able to say much more via the Internet or mobile phones (especially using text messaging) than via other means. It may be that Internet and mobile phone communication give a 'voice' in society to those who otherwise find it difficult to speak out.

It may be unlikely that the introduction of the Internet and mobile phones has made shy young people any worse at face-to-face communication than they ever have been in the past. The research from this thesis would certainly indicate that this might be the case. For example, it may just be the case that in the modern world, rather than a teenage boy asking his friend to ask a girl out on a date, as might have happened 15 years ago, the equivalent situation today is that the boy would ask the girl out himself using a text message. In general, it may be that Internet and mobile phone technology actually allow young people to navigate their way through difficult teenage years more easily, and that society should not be overly critical about young people's use of communication technology, trusting that nothing will ever entirely substitute face-to-face communication. The young people who participated in the focus groups in Chapter 6 certainly indicated that face-to-face communication was still important to them.

In fact, there is research concerning the possible benefits of CMC for those who are socially anxious. For example, Roberts et al. (2000) found that shy individuals reported that they were less inhibited in forming relationships online than were in forming them offline in an interview study. Furthermore, in

a 6-month longitudinal study which has been described earlier in this thesis, Roberts et al. (2000) followed a group of new Internet users, comparing those who were 'high shy' with those who were 'low shy'. First, it was found that the shy group's online shyness matched the low-shy group's and also that for the high-shy group, offline shyness decreased over the 6 months of the study. In explaining the latter finding, Roberts et al cited Cheek and Melchior (1986) who stated that socially anxious individuals can get trapped in a cycle of shyness where their protective self-presentation style and negative cognitions do not offer them the opportunity to experience successful social interactions. They argued that CMC may provide shy individuals with incidences in which they can experiment with less-shy behaviours and break this cycle. In addition, they also argued that even where social behaviours remain on-line, at least this allows shy individuals some scope for social connection. Roberts et al. emphasised that contrary to a position maintained by Carducci and Zimbardo (1995), who stated that CMC was a way of avoiding face-to-face interaction, we should encourage socially anxious people not to cease CMC socialising, but instead to transfer their new skills to offline situations.

Joinson (1998) also made the point that according to self-perception theory as described by Bem (1972), people develop their attitudes by observing their own behaviour and concluding what attitudes must have caused them. That is, the way that we behave determines how we understand ourselves. Joinson also described how Ross (1977) suggested that people tend to exaggerate the role of personality in influencing the ways that they behave. Therefore, it is possible that shy people who are uninhibited online may actually come to see themselves as uninhibited people in general. Thus,

their uninhibited behaviour may transfer to offline situations and they may effectively become less shy. In further support of the idea that use of the Internet may have a tendency to make people less shy, McKenna et al. (2002) found that a random sample of Internet newsgroup users were less socially anxious after two years of Internet use. Furthermore, 47 percent of participants in this study reported that Internet use had reduced their feelings of loneliness, as opposed to only 6 percent who had reported that they felt lonelier since using the Internet. In addition, 68 percent of participants reported that use of the Internet had increased their social circle, as opposed to 3 percent who reported having fewer friends as a result of Internet use. Thus, it may be that in general, the Internet is a socially beneficial technology. However, future research should certainly address if there are exceptions to this rule.

### **Concluding remarks**

This thesis has indicated that social anxiety and social phobia as psychological characteristics are not correlated with who does, and does not, use the Internet and mobile phones either generally, or for communication purposes. This lack of correlation is interesting because it implies that socially anxious and phobic people use text-based Internet and mobile communication media as much as anyone else – that is, shyness and social phobia do not seem to be detrimental to the frequency with which those with these conditions might use these forms of communication. In the case of social phobia this may be because mediated communication allows the avoidance of scrutiny. In the case of shyness, this may be because certain characteristics

of text-based internet and mobile phone communication may encourage users to communicate in a more uninhibited manner than they would do face-to-face. Despite the fact that social anxiety as a psychological characteristic is not correlated with the use of text-based Internet and mobile phone communication media, young people may from time-to-time use these to manage awkward social interactions, about which they have transient anxieties or concerns. Finally, the fact that text-based Internet and mobile phone communication allow young people higher levels of control over their interactions, might be one important reason why these technologies are popular amongst young people in general.

The rise of Internet and mobile phone communication technologies in society has been quite remarkable. However, from a psychological point of view it should be remembered that the reason that people like to use these devices cannot be reduced to the fact that they allow us to transmit information. In his book, *Emotional Design: The Psychology of Everyday Things*, Norman (2004) indicated that communication technologies are important to us, not necessarily because of what we communicate, but because communication technologies are emotional tools and social facilitators. Norman made the point that humans feel a need to communicate continually for comfort and reassurance. For example, he discussed the importance people now attach to instant messaging programs (which has certainly been supported by this thesis). One function of instant messaging that Norman stated could be especially important is that it allows people to feel that others are present even if information is not being exchanged, because a user can see whether or not their contacts are online. This has not

been the case with other forms of technology such as the telephone, email and text messaging and is an important consideration.

Likewise, both Norman and this thesis itself have argued that it is not always the pure communicative aspects of mobile phone communication that cause young people to send text messages. Research describing how text messaging may often be a proxy for gift exchange amongst young people has been highlighted by this thesis (Taylor and Harper, 2003; Taylor and Harper, 2003). Furthermore, the fact that mobile phone ownership may be related to social capital amongst young people, rather than being important for communication purposes per se has also been described. The point to note is that future research concerning use of the Internet and mobile phones should remember that the reasons for people's use of communication technology may often be emotional rather than purely functional.

Investigation of Internet and mobile phone use remains an important and exciting area for psychological study, and it is hoped that this thesis has helped to advance knowledge about the use of these technologies by young people, especially in regard to communication. Clearly, there is still much to be learned: research into the use of the Internet and mobile phones is still in its early stages. Mobile phones, in particular had received very little attention from researchers when this thesis was started, although this situation now seems to be improving. In addition, the ways in which the Internet and mobile phones are used for communication are constantly changing, which implies a need for constantly updated research. For example, instant messaging became an increasingly important communication medium amongst young people whilst research for this thesis was in progress, and multi-media

messaging may become increasingly relevant to young people's use of mobile phones as time goes on. Given the massive impact that the Internet and mobile phones have on the ways that we connect and interact with one another, long may research into their use continue so that we, as humans, can better understand ourselves and the ways we relate to each other.

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## Appendix I: Questionnaire used in Chapter 2

### Questionnaire on Internet and Mobile Telephone Use

Please fill in the following questionnaire carefully and write clearly when required. The data you provide will contribute to a large-scale survey of Internet and mobile phone use by young people in the UK.

1. Sex: *Please tick appropriate response*

Male

Female

2. Age: *Please complete* \_\_\_\_\_ years \_\_\_\_\_ months

3. *(Optional)* Please describe your ethnic background (for example: African, Afro-Caribbean, Pakistani, Indian, White UK, White Irish):

---

4. Do you use the Internet?

*Please tick appropriate response*

a) Yes  No

If "no" please answer part (b), then go on to question 21. If "yes" go on to question 5 now.

b) What are your reasons for not using the Internet?

*Please tick all appropriate responses*

- Lack of interest
- No need
- Do not have computer at home
- Lack of confidence/skills
- No one in household knows how to use it
- Do not have access to equipment
- Cost of accessing Internet too high
- Cost of computer/software too high
- Do not have equipment at home
- Do not have time
- Poor opinion of the Internet
- Need to upgrade computer/software
- Have not got round to it yet
- Health problems make it difficult

Other reasons (please state) \_\_\_\_\_

5. Do you have a computer at home?

*Please tick appropriate response*

Yes  No

6. How often do you use the Internet for email?

*Please tick appropriate response*

- Never
- Less than once a month
- Once a month
- A couple of times a month
- Once a week
- A few times a week
- Once a day
- More than once a day

7. How often do you use the Internet for the World Wide Web?

*Please tick appropriate response*

- Never
- Less than once a month
- Once a month
- A couple of times a month
- Once a week
- A few times a week
- Once a day
- More than once a day

8. For how many hours a week do you use the Internet?

*Please tick appropriate response*

- Up to 1 hour a week.
- 2 to 4 hours a week.
- 5 to 7 hours a week.
- 8 to 10 hours a week.
- 11 to 15 hours a week.
- 16 to 20 hours a week.
- 21 to 30 hours a week.
- 31 to 40 hours a week.
- 40+ hours a week.

9. For what purposes do you use the Internet?

*Please tick all appropriate responses*

- Finding information about goods/services
- Using e-mail
- General browsing or surfing
- Finding information related to education
- Buying or ordering tickets / goods / services
- Personal banking / financial / investment activities
- Looking for work
- Playing or downloading music
- Using or accessing government / official services
- Using chat rooms or sites
- Downloading software, including games

Other purposes (please state) \_\_\_\_\_

10. From where do you find about new websites/webpages?

*Please tick all appropriate responses*

- Friends
- Books
- Via hyperlinks from other web pages.
- Internet search engines.
- Internet directories.
- Usenet groups.
- Magazines/newspapers.
- Signatures at end of email messages.
- TV advertisements.

Other sources (please state) \_\_\_\_\_

11. At which of the following locations have you accessed the Internet?

*Please tick all appropriate responses*

- Own home.
- Another person's home
- At own workplace.
- A school, college, university or other educational institution
- A public library
- An Internet café or shop
- A community or voluntary organisation
- A government office
- A post office

Other locations (please state) \_\_\_\_\_

12. For how long have you been using the Internet?

*Please tick appropriate response*

- Less than six months.
- 7-12 months.
- Between 13 months and 2 years.
- More than 2 years but less than 3 years.
- Between 3 years and 5 years.
- More than 5 years but less than 7 years.
- 7 or more years

13. How long does your typical Internet session last?

*Please tick appropriate response*

- 1-5 minutes
- 6-15 minutes
- 16-45 minutes
- 46 minutes – 90 minutes
- 91 minutes – 180 minutes
- More than 180 minutes.

14. How often do you find good or helpful web sites?

*Please tick appropriate response*

- Frequently
- Sometimes
- Occasionally
- Rarely
- Almost never

15. How often do you feel confused when you use the Internet to find information?

*Please tick appropriate response*

- Frequently
- Sometimes
- Occasionally
- Rarely
- Almost never

16. What do you consider are the biggest problems with the Internet?

*Please tick all appropriate responses*

- Poor quality information
- Pages take too long to load
- Too much information
- Irrelevant "pop-up" information
- Objectionable material

Other problems (please state) \_\_\_\_\_

17. Do you have a personal email address?

*Please tick appropriate response*

- Yes  No

18. Do you have a web page?

*Please tick appropriate response*

- Yes  No

19. How important do you feel the Internet is in your life?

*Please tick appropriate response*

- Very Important
- Important
- Somewhat important
- Limited importance
- Of no importance

20. How satisfied are you with the Internet?

*Please tick appropriate response*

- Totally
- Very
- Somewhat
- A little
- Not at all

21. Do you own or sometimes use a mobile phone?

*Please tick appropriate response*

a) Yes  No

If "no" please answer part (b) and then leave the remaining questions. If "yes", please go on to question 22 now.

b) What are your reasons for not using a mobile phone?

*Please tick all appropriate responses*

- No need to use one
- Cost of handset too great
- Cost of line rental too great
- Have not got round to buying one yet
- Low opinion of mobile technology
- Do not understand mobile technology
- Fear that using mobile phone may damage health

Other reasons (please state) \_\_\_\_\_

22. For how long have you used a mobile phone?

*Please tick appropriate responses*

- Less than six months.
- 7-12 months.
- Between 13 months and 2 years.
- More than 2 years but less than 3 years.
- Between 3 years and 5 years.
- More than 5 years but less than 7 years.
- 7 or more years

23. For which purposes do you use a mobile phone?

*Please tick all appropriate responses*

- Making calls
- Receiving calls
- Text Messaging
- Accessing the Internet

Other purposes (please state) \_\_\_\_\_

24. How many phone calls do you make using a mobile phone?

*Please tick appropriate response*

- None
- One a week or less
- A few a week, but less than one a day
- About one a day
- 2-5 a day
- 6-10 a day
- 11-15 a day
- 16-20 a day
- 21 or more a day

25. How many text messages do you send using a mobile phone?

*Please tick appropriate response*

- None
- One a week or less
- A few a week, but less than one a day
- About one a day
- 2-5 a day
- 6-10 a day
- 11-15 a day
- 16-20 a day
- 21 or more a day

26. How often do you access the Internet using a mobile phone?

*Please tick appropriate response*

- Never
- Once a week or less
- A few times a week, but less than once a day
- About once a day
- 2-5 times a day
- 6-10 times a day
- 11-15 times a day
- 16-20 times a day
- 21 or more times a day

Thank you for filling in this questionnaire.

## Appendix II: Questionnaire placed on Internet

# Internet and Mobile telephone use questionnaire

Please fill in the following questionnaire carefully and write clearly when required.  
The data you provide will contribute to a large-scale survey of Internet and mobile phone use by young people in the UK.

Please enter the name of your school here:

**1. Sex:**

Please tick appropriate response

Male

Female

2. Age: Please complete  years  months

**3. (Optional) Please describe your ethnic background**

(for example: African, Afro-Caribbean, Pakistani, Indian, White UK, White Irish):

4. Do you use the Internet?

Please tick appropriate response

Yes

No

If "no" please answer part (b), then go on to question 21. If "yes" go on to question 5 now.

b) What are your reasons for not using the Internet?

Please tick all appropriate responses

Lack of interest

No need

No one in household knows how to use it

Do not have access to equipment

Cost of accessing Internet too high

Do not have computer at home

Lack of confidence/skills

Do not have equipment at home

Do not have time

Poor opinion of the Internet

Need to upgrade computer/software

Have not got round to it yet

Health problems make it difficult

Other reasons (please state)

5. Do you have a computer at home?

Please tick appropriate response

Yes

No

6. How often do you use the Internet for email?

Please tick appropriate response

Never

Less than once a month

Once a month

A couple of times a month

Once a week

A few times a week

Once a day

More than once a day

7. How often do you use the Internet for the World Wide Web?

Please tick appropriate response

Never

Less than once a month

Once a month

A couple of times a month

Once a week

A few times a week

Once a day

More than once a day

8. For how many hours a week do you use the Internet?

Please tick appropriate response

- Never
- Up to 1 hour a week
- 2 to 4 hours a week
- 5 to 7 hours a week
- 8 to 10 hours a week
- 11 to 15 hours a week
- 16 to 20 hours a week
- 21 to 30 hours a week
- 31 to 40 hours a week
- 40+ hours a week

9. For what purposes do you use the Internet?

Please tick all appropriate responses

- Finding information about goods/services
- Using e-mail
- General browsing or surfing
- Finding information related to education
- Buying or ordering tickets / goods / services
- Personal banking / financial /investment activities
- Looking for work
- Playing or downloading music
- Using or accessing government /official services
- Using chatrooms or sites
- Using Instant Messaging services
- Playing games
- Using auction sites (e.g.e-bay)
- Using Discussion forums/newsgroups/Usenet
- Other purposes (please state)

10. How do you find out about new web-sites/web pages?

Please tick all appropriate responses

- Friends
- Books
- Via hyperlinks from other web pages
- Internet search engines
- Internet directories
- Usenet groups
- Magazines/newspapers
- Signatures at end of email messages
- TV advertisements
- Other sources (please state)

11. At which of the following locations have you accessed the Internet?

Please tick all appropriate responses

- Own home
- Another person's home
- At own workplace
- A school, college, university or other educational institution
- A public library
- An Internet café or shop
- A community or voluntary organisation
- A government office
- A post office
- Other locations (please state)

12. For how long have you been using the Internet?

Please tick appropriate response

- Less than six months
- 7-12 months
- Between 13 months and 2 years
- More than 2 years but less than 3 years
- Between 3 years and 5 years
- More than 5 years but less than 7 years
- 7 or more years

13. How long does your typical Internet session last?

Please tick appropriate response

- 1-5 minutes
- 6-15 minutes
- 16-45 minutes
- 46 minutes – 90 minutes
- 91 minutes – 180 minutes
- More than 180 minutes

14. How often do you find good or helpful web sites?

Please tick appropriate response

- Frequently
- Sometimes
- Occasionally
- Rarely
- Almost never

15. How often do you feel confused when you use the Internet to find information?

Please tick appropriate response

- Frequently
- Sometimes
- Occasionally
- Rarely
- Almost never

16. What do you consider are the biggest problems with the Internet?

Please tick all appropriate responses

- Pages take too long to load
- Too much information
- Irrelevant "pop-up" information
- Objectionable material
- Other problems (please state)

17. Do you have a personal email address?

Please tick appropriate response

- Yes
- No

18. Do you have a web page?

Please tick appropriate response

- Yes
- No

19. How important do you feel the Internet is in your life?

Please tick appropriate response

Very Important

Important

Somewhat important

Limited importance

Of no importance

20. How satisfied are you with the Internet?

Please tick appropriate response

Totally

Very

Somewhat

A little

Not at all

21. Do you own or sometimes use a mobile phone?

Please tick appropriate response

a) Yes  No

If "no" please answer part (b) and then leave the remaining questions. If "yes", please go on to question 22 now.

b) What are your reasons for not using a mobile phone?

Please tick all appropriate responses

No need to use one

Cost of handset too great

Cost of line rental too great

Have not got round to buying one yet

Low opinion of mobile technology

Do not understand mobile technology

Fear that using mobile phone may damage health

Other reasons (please state)

22. For how long have you used a mobile phone?

Please tick appropriate responses

Less than six months

7-12 months

Between 13 months and 2 years

More than 2 years but less than 3 years

Between 3 years and 5 years

More than 5 years but less than 7 years

7 or more years

**23. For which purposes do you use a mobile phone?**

Please tick all appropriate responses

- Making calls
- Receiving calls
- Text Messaging
- Accessing the Internet
- Other purposes (please state)

**24. How many phone calls do you make using a mobile phone?**

Please tick appropriate response

- None
- One a week or less
- A few a week, but less than one a day
- About one a day
- 2-5 a day
- 6-10 a day
- 11-15 a day
- 16-20 a day
- 21 or more a day

**25. How many text messages do you send using a mobile phone?**

Please tick appropriate response

- None
- One a week or less
- A few a week, but less than one a day
- About one a day
- 2-5 a day
- 6-10 a day
- 11-15 a day
- 16-20 a day
- 21 or more a day

26. How often do you access the Internet using a mobile phone?

Please tick appropriate response

- Never
- Once a week or less
- A few times a week, but less than once a day
- About once a day
- 2-5 times a day
- 6-10 times a day
- 11-15 times a day
- 16-20 times a day
- 21 or more times a day

Thank you for filling in this questionnaire.  
Now please click the button below to submit your answers



**Appendix III: Questionnaire used to study relationship between social anxiety, social phobia and Internet and mobile phone use**

**Personal details (optional):**

Please enter your name here if you would not mind being interviewed about your answers to this questionnaire at a later date.

Name: \_\_\_\_\_

**Please read and respond to each question carefully. However, if you do not want to answer any questions, feel free to leave a blank.**

1. Sex (please tick appropriate response)

Male

Female

2. How old are you? \_\_\_\_\_ years (please complete)

3. In your own words, please describe your ethnicity (e.g. "white UK", "English-Pakistani", "Afro-carribean" etc):

\_\_\_\_\_

4. Do you use the Internet? (please tick appropriate response).

Yes

No

If "no", go straight on to question 6 now. If "yes", please indicate below for how many hours a week you use the Internet, and then continue with question 5.

- Less than 1 hour
- More than 1 hour but less than 2 hours
- More than 2 hours but less than 3 hours
- More than 3 hours but less than 5 hours
- More than 5 hours but less than 10 hours
- More than 10 hours but less than 15 hours
- More than 15 hours but less than 20 hours
- More than 20 hours but less than 30 hours
- More than 30 hours but less than 40 hours
- More than 40 hours but less than 50 hours
- More than 50 hours but less than 60 hours
- More than 60 hours

5. Please indicate on the scales below how often you use the Internet for the purposes described.

For these scales: **0 = never, 1 = very infrequently 2 = fairly infrequently 3 = fairly frequently and 4 = very frequently.**

So, for example, in question (a) if you felt that you used the Internet to find information about goods and services fairly frequently, you would circle the number 3 on the scale next to the question asked, thus:

**Example**

a. Finding information about goods/services    0    1    2    **3**    4

**Questions**

- |                                                        |   |   |   |   |   |
|--------------------------------------------------------|---|---|---|---|---|
| a. Finding information about goods/services            | 0 | 1 | 2 | 3 | 4 |
| b. Using e-mail                                        | 0 | 1 | 2 | 3 | 4 |
| c. General browsing or surfing                         | 0 | 1 | 2 | 3 | 4 |
| d. Finding information related to education            | 0 | 1 | 2 | 3 | 4 |
| e. Buying or ordering tickets / goods / services       | 0 | 1 | 2 | 3 | 4 |
| f. Personal banking / financial /investment activities | 0 | 1 | 2 | 3 | 4 |
| g. Looking for work                                    | 0 | 1 | 2 | 3 | 4 |
| h. Playing or downloading music                        | 0 | 1 | 2 | 3 | 4 |
| i. Using or accessing government /official services    | 0 | 1 | 2 | 3 | 4 |
| j. Using chat rooms or sites                           | 0 | 1 | 2 | 3 | 4 |
| k. Using Instant Messaging services                    | 0 | 1 | 2 | 3 | 4 |
| l. Playing games                                       | 0 | 1 | 2 | 3 | 4 |
| m. Using auction sites (e.g. e-bay)                    | 0 | 1 | 2 | 3 | 4 |
| n. Using Discussion forums/newsgroups/Usenet           | 0 | 1 | 2 | 3 | 4 |
| o. Other purposes                                      | 0 | 1 | 2 | 3 | 4 |



7. Please rank the following methods of communication from 1 to 8 in terms of which **you most prefer to use to communicate with people** and **which you least prefer to use**. Rank the method of communication you most prefer to use as "1" and that you least prefer to use as "8".

<b>Method of communication</b>	<b>Rank (1-8)</b>
Instant messaging services (e.g. MSN Messenger)	
Mobile phone calls	
Landline phone calls	
Text messaging	
Email	
Chat rooms	
Face-to-face contact	
Writing letters	

8. Please indicate the degree to which you feel the following statements are characteristic or true of you.

For these scales: **0 = not at all, 1 = slightly 2 = moderately 3 = very and 4 = extremely.**

So, for example, if you felt that the statement "I become anxious if I have to write in front of other people" was slightly true of you, you would circle the number 1 on the scale next to the question asked, thus:

**Example**

I become anxious if I have to write in front of other people.       0   1   2   3   4

**Statements**

I become anxious if I have to write in front of other people.      0   1   2   3   4

I become self-conscious when using public toilets.      0   1   2   3   4

I can suddenly become aware of my own voice and of others listening to me.      0   1   2   3   4

I get nervous that people are staring at me as I walk down the street.      0   1   2   3   4

I fear I may blush when I am with others.      0   1   2   3   4

I feel self-conscious if I have to enter a room where others are already seated.      0   1   2   3   4

I worry about shaking or trembling when I'm watched by other people.      0   1   2   3   4

I would get tense if I had to sit facing other people on a bus or a train.      0   1   2   3   4

I get panicky that others might see me to be faint, sick or ill.      0   1   2   3   4

I would find it difficult to drink something if in a group of people.      0   1   2   3   4

It would make me feel self-conscious to eat in front of a stranger at a restaurant.      0   1   2   3   4

I am worried people will think my behaviour odd.      0   1   2   3   4

I would get tense if I had to carry a tray across a crowded cafeteria.      0   1   2   3   4

I worry I'll lose control of myself in front of other people.	0	1	2	3	4
I worry I might do something to attract the attention of others.	0	1	2	3	4
When in a lift I am tense if people look at me.	0	1	2	3	4
I can feel conspicuous standing in a queue.	0	1	2	3	4
I get tense when I speak in front of other people.	0	1	2	3	4
I worry my head will shake or nod in front of others.	0	1	2	3	4
I feel awkward or tense if I know people are watching me.	0	1	2	3	4
I get nervous if I have to speak with someone in authority (teacher, etc.)	0	1	2	3	4
I have difficulty making eye-contact with others.	0	1	2	3	4
I become tense if I have to talk about myself or my feelings.	0	1	2	3	4
I find difficulty mixing comfortably with the people I work/ attend school/university/college with.	0	1	2	3	4
I tense-up if I meet an acquaintance in the street.	0	1	2	3	4
When mixing socially I am uncomfortable.	0	1	2	3	4
I feel tense if I am alone with just one other person.	0	1	2	3	4
I am at ease meeting people at parties, etc.	0	1	2	3	4
I have difficulty talking with other people.	0	1	2	3	4
I find it easy to think of things to talk about.	0	1	2	3	4
I worry about expressing myself in case I appear awkward.	0	1	2	3	4
I find it difficult to disagree with another person's point of view.	0	1	2	3	4
I have difficulty talking to attractive persons of the opposite sex.	0	1	2	3	4
I find myself worrying that I won't know what to say in social situations.	0	1	2	3	4
I am nervous mixing with people I don't know well.	0	1	2	3	4
I feel I'll say something embarrassing when talking.	0	1	2	3	4
When mixing in a group I find myself worrying I'll be ignored.	0	1	2	3	4
I am tense mixing in a group.	0	1	2	3	4
I am unsure whether to greet someone I know only slightly.	0	1	2	3	4

