Facebook and Irish adolescents:

the relationship between

social media use, personality,

and well-being.

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Contents

Abstract

This study looks at Irish adolescents' use of Facebook. It aims to investigate what personality traits are related to Facebook use, and if Facebook use is related to self-esteem and psychological well-being. A self-report questionnaire was given to 167 adolescents, 95.2% of whom are Facebook users. The findings indicate relationships between Psychoticism and intense Facebook use, number of friends, time spent using Facebook, and using Facebook to initiate contact with strangers. They also point to correlations between Extraversion and intense Facebook use and number of friends. In the older group of adolescents, relationships between Facebook use and lower sense of well-being are evident. Results suggest relationships between use of Facebook, personality, and well-being that may inform further research.

Introduction

The use of social networking sites, and in particular Facebook, is increasing among all ages and genders. It is becoming a primary method of contact and communication among a huge variety of people, as well as a means to browse, spend time, play games, share news and publish photographs (Ryan & Xenos, 2011). As a result of its enormous popularity and its perceived importance in the lives of its users, researchers are beginning to view it as an important phenomenon to be studied.

Facebook Use in Ireland

At Facebook's launch in February 2004, it was restricted to Harvard students. Its popularity growing rapidly, it spread to other universities in Boston and the USA, opening to high school students and UK universities in 2005 (Phillips, 2007). In 2006, the restriction to students ended and it grew from 25 million monthly users in January of that year to 1 billion monthly users in September 2012 (Facebook, 2012). It is the most popular social network in Ireland, among adults and adolescents (Ipsos-MRBI, 2012). Its impact on the lives of teenagers is constantly debated in the media (e.g. Weyman, 2013; Freyne, 2013).

According to Ipsos-MRBI, in November 2012, 55% of Irish people had a Facebook account and 59% of account holders used the site on a daily basis (Ipsos-MRBI, 2012). However, these figures only apply to people aged 15 and above, so perhaps data from analytics company SocialBakers is more accurate; their statistics claim that 49% (or 2.2 million) of Irish people use Facebook, which accounts for 72% of the online population in Ireland (SocialBakers, 2013). Facebook themselves claim that 70% of Irish Facebook users use the site daily, with 50% using the site on a

mobile device. They also state that the average Irish person has 268 friends and spends five hours a month on the site (Abbott, 2012).

With respect to adolescents, a 2011 EU-wide project by the London School of Economics yields the richest data. According to this, 75% of 13-14 year olds and 88% of 15-16 year olds in Ireland have a social networking account. This breaks down to 71% of boys and 86% of girls aged 13-16 (O'Neill, Grehan & Olafsson, 2011). Of these, 58% say that Facebook is their main or only social network. With the rapid growth of Facebook, it is likely that this figure has grown since the survey was conducted. A fifth of teenagers use Facebook to contact people they have not met in real life, while a tenth of Irish teenagers display their address or phone number on their Facebook profile, and over half display the name of their school. (Livingstone, Olafsson and Staksrud, 2011). Almost seven tenths of Irish children between the ages of 13 and 16 use the Internet daily. On average, Irish adolescents spend an average of 72.5 minutes a day online. Both these figures are below the European averages, but adolescents in Ireland are more likely to experience use the Internet excessively than those in other European countries. Two-fifths of 11-16 year olds reported that they experienced one or more forms of excessive Internet use "often" or "fairly often", in comparison with a European average of 30% (O'Neill, Grehan and Olafsson, 2011).

Internet Use, Personality and Well-being

Research on the relationship between Internet use and well-being can be contradictory (Lundmark, Kiesler, Mukophadhyay & Scherlis, 1998; Amichai-Hamburger, Wainapel & Fox, 2002) In their longitudinal study of Internet use, Kraut, Patterson, Lundmark, Kiesler, Mukophadhyay and Scherlis (1998) found correlations

between use of the Internet and loneliness, depression and disengagement from traditional social interactions. However, this study did not differentiate between individuals' different uses of the Internet and their differing personalities, a limitation that Amichai-Hamburger, Wainapel and Fox attempted to address in 2002. They argued that the Internet would not have a universal impact on the well-being of its users, but that this would be moderated by their personalities and the types of online services they used. They found that introverted and neurotic people preferred interacting online, while extroverted and emotionally stable people preferred traditional means of interaction. They described the Internet as being beneficial to those who were introverted and neurotic, giving them a social outlet that was otherwise too difficult for them, and allowing them to discover and express their real self and alleviate their isolation, and therefore improve their well-being.

Well-being and Facebook

Research specifically referring to Facebook's relationship with well-being is no less contradictory (Kalpidou, Costin & Morris, 2011; Ellison, Steinfield & Lampe, 2007; Steinfield, Ellison & Lampe, 2008). Kalpidou, Costin and Morris (2011) found that having more Facebook friends was related to low self-esteem and poor academic and social adjustment to university in first year undergraduates. They compared these to students in other years, and found that senior undergraduates displayed a positive relationship between Facebook use and self-esteem, surmising that this meant that Facebook was positively related to self-esteem when it was used to maintain relationships instead of forming them. On the other hand, Ellison, Steinfield and Lampe (2007) and Steinfield, Ellison and Lampe (2008) found that Facebook acts as a mediator for college students when forming relationships. They demonstrated its role

in facilitating and helping to initiate communication, thereby assisting people with lower self-esteem to form and maintain relationships in a way that diminishes fears of rejection. While the two studies used the Facebook Intensity Scale (discussed below), they differed in how they coded the results. Ellison, Steinfield and Lampe (2007) averaged the items on the scale, coming up with a Facebook Intensity Score. Kalpidou, Costin and Morris (2011) treated some of the items separately. This, with the major difference in sample size, could possibly account for some of the differences in results here. This study will focus on Facebook and well-being in adolescents, investigating whether or not there are significant relationships between self-esteem, well-being and intensity and types of use.

Personality and Facebook – Extraversion, Neuroticism and Psychoticism

Studies have also focused on Facebook and personality, and again, results are inconsistent (Skues, Williams & Wise, 2012; Correa, Willard Hinsley & Gil de Zuniga, 2009; Amichai-Hamburger, Wainapel & Fox, 2002; Ross, Orr, Sisic, Arseneault, Simmering & Orr, 2009; Hughes, Rowe, Batey & Lee, 2012; Smock, Ellison, Lampe & Wohn, 2011). While Skues, Williams and Wise (2012) found few positive correlations between most personality dimensions and Facebook use, others have found many correlations. Correa, Willard Hinsley and Gil de Zuniga (2009) found that Extraversion was positively correlated with social media use, however Amichai-Hamburger, Wainapel and Fox (2002) had previously found the opposite, reporting, as stated above, that introverted and neurotic people use online communication to alleviate isolation. Correa, Willard Hinsley and Gil de Zuniga (2009) argued that this disparity is due to the differences in the type of social networking sites studied and the rapid evolution of the Internet. When Amichai-

Hamburger and his colleagues were completing their study, the main social networks used were chat-rooms, which provided anonymity; people interacted under screen names, which were not necessarily related to their real name, with people they did not know outside the chat-room. In addition, their online activities could not easily be traced back to the person behind them.

More recently, the trend has veered towards the Internet interactions being between people who know each other in real life, without the anonymity that was previously provided (Ross et al, 2009). This leads to a difference in the types of people that engage in the activities, with social network site use being an extension of traditional social media that the more extraverted people prefer. Ross and his colleagues (2009) agreed with this view, arguing that some social networking sites are changing the way the Internet has traditionally been used, with Facebook leading this "offline to online" trend (i.e. friends meet offline and then communicate online). However, it could be still true that social networking sites offer the chance for people to present themselves in a way that is difficult offline; the EU Kids Online project found that 39% of children aged 11-16 say it is "a bit" or "very true" that they find it easier to be themselves on the Internet than with people offline. (O'Neill, Grehan and Olafsson, 2011).

Hughes, Rowe, Batey and Lee (2012) did not find any significant relationship between Facebook use and Extraversion, but agreed that there was a correlation between social Facebook use and Neuroticism, particularly among younger users. They suggest that the personality correlations with Facebook are not straightforward and that the way in which people use social networking sites must be addressed in any

study, rather than continuing to focus on online behaviour or even Facebook behaviour as a single entity. Smock, Ellison, Lampe and Wohn (2011) agreed with this and researched the motivations behind using different Facebook and compared the results against unidimensional measures such as time spent on the site. They found that the predictors of general use differ significantly from the predictors of specific features, concluding that focusing merely on general use obscures real relationships between uses and motivations. If this is the case, it could also obscure relationships between uses and personality.

Studies are now beginning to focus on personality and different behaviours on social networking sites (McAndrew & Jeong, 2012; Muscanell & Guadagno, 2011; Ross et al, 2009; Ryan & Xenos, 2011; Amichai-Hamburger & Vinitzky, 2010). McAndrew and Jeong (2012) looked at a large international sample, and outlined gender, age and relationship differences in the way in which people utilise Facebook features. They showed that female users tend to have more friends and spend more time on the site than males, while older users of both genders spend less time on it, however, they did not delve into personality factors. Muscanell and Guadagno (2011) did a similar study, investigating how gender and personality moderate behaviour on social networking sites, and found that while women tend to use such sites more for relationship maintenance, while men use them to form new relationships. Extraverted people were more likely to post photographs and engage in social activities on the sites. Unlike Hughes et al. (2012), they did not find any correlations with social network use and Neuroticism, however they point out that their sample contained mainly of people who were low in Neuroticism.

Ross et al. (2009) also attempted to focus on how personality affected the way in which different aspects of Facebook's services were utilised. While they reported that personality factors were not as influential as previously hypothesised, they found that specific activities on Facebook were related to personality factors. For example, they reported that people high in Extraversion were likely to belong to more Facebook groups, yet were not significantly more likely to use Facebook's communicative functions or have more friends. This was a finding contradicted by Ryan and Xenos (2011), who found that extraverted people tend to use the communicative features as an extension of their social lives. However, Ryan and Xenos (2011) point out that the chat function did not exist when Ross et al. (2009) did their research, so the definition of 'communicative functions' had changed. As well as this, Ross et al. (2009) used university students as their sample, while Ryan and Xenos (2011) had a general population of Internet users, which may account for the conflicting results.

In a partial replication of the Ross et al. (2009) study, Amichai-Hamburger and Vinitzky (2010) showed much greater correlations between personality and Facebook use. They argued that the previous study had relied too much on subjective measures and self-report of Facebook use, and instead examined the way in which people built their profiles in a more objective manner, by examining the actual profiles on Facebook. This study yielded much stronger correlations than the study by Ross et al. (2009). They found that people who scored high on Extraversion had greater numbers of friends, while introverted people were more likely to share personal information on their profiles. They also found that people who scored high on Neuroticism used privacy controls less, and were more likely to post photographs, a finding that directly contradicted those of Ross et al. (2009).

Very little research is available at this time that relates Facebook use in any way to Eysenck's final personality dimension, Psychoticism, as much of the research has focused on other personality traits and measures. Some studies (e.g. Muscanell & Guadagno, 2012) have shown correlations between aspects of Facebook use and the Big Five traits of conscientiousness and agreeableness, low levels of which may correspond to high levels of Eysenck's dimension of Psychoticism (Cervone & Pervin, 2009, p. 269). Studies of general Internet use have yielded some correlations between Psychoticism and making new friends online (Tosun & Lajunen, 2010), links between the trait and Internet addiction (Li, Wang & Wang, 2008) and significantly higher levels of the trait in those adolescents who bully, both on and offline (Corcoran, Connolly & O'Moore, 2008), yet it is still a neglected area of research. This study will investigate whether there are correlations between personality variables and Facebook use, taking into account the ways in which individuals use Facebook. It will be particularly interesting to investigate if there is a relationship between Facebook use and Psychoticism.

Facebook Measures

Many of the aforementioned studies used their own measures of Internet and social network use. For some (e.g. Correa, Willard Hinsley & Gil de Zuniga, 2009; Skues, Williams & Wise, 2012), this meant questioning participants about the amount of time spent online or on the social network and their number of friends. Other studies (e.g. McAndrew & Jeong, 2012; Ross et al.,1999; Ryan & Xenos, 2011; Muscanell & Guadagno, 2011) used self-designed questionnaires asking about different features. Others (e.g. Kalpidou, Coston & Morris, 2011) used the Facebook

Intensity Scale to measure Facebook use, which was a scale developed by Ellison, Steinfield and Lampe (2007). They had seen the need for a measure of Facebook use that was a better measure than simply asking about average time spent on the site and more valid than self-report about activities. The scale also incorporates the user's emotional connection to the site and how it integrates into the user's daily life. Based on research consistent with the Smock et al. (2011) hypothesis that different uses of social networking sites have different motivations and correlations, Ellison, Steinfield and Lampe (2011) went on to develop a Connection Strategies Scale to investigate these effects more closely. This scale was effective in identifying three types of Facebook user - Initiating, Social-Information Seeking and Maintaining - and demonstrating that these three types of users differ not only in how they use Facebook, but the benefits they glean from in in terms of relationships, well-being, personality and self-esteem (Ellison, Steinfield & Lampe, 2011). This research will use these two scales to measure the Facebook usage of the adolescents.

Adolescents and Social Networking Sites

Few studies deal particularly with adolescents, and even fewer deal specifically with adolescents' use of Facebook. In a study of general Internet use, Gross, Juvonen and Gable (2002) found no correlation between well-being and the time spent online in a group of seventh graders and they suggested that social networking was used by most of these teenagers as an extension of their offline social lives. They did not find a difference in genders, but highlighted the need for a study to compare teenagers of different ages, as their study focused on only one. Valkenburg, Peter and Schouten (2006) found that self-esteem and well-being can be both negatively and positively affected by the use of Dutch site CU2, depending on the

types of interactions. Xu, Wan, Zhang, Liu and Sun (2011) found a significant relationship between Internet use and lower psychological well-being in teenagers in China. This relationship increased in older adolescents, as they became more intensely involved in Internet use. They also described a difference between genders, as male adolescents tend to use the Internet more frequently, but had higher well-being than female adolescents. None of the above studies concentrated on Facebook, despite its popularity, and therefore, this will be a central focus for this study.

Samples of Previous Studies

Many studies with specific regard to Facebook have been limited to student populations. This is probably for two reasons, the first being ease of access for the researchers. The second is probably because Facebook was originally a university phenomenon (Phillips, 2007). However, as its current users are drawn from the wider population, this focus on students in more recent studies could be seen as a limitation of the studies, taking away from their generalisability. Some recent studies of Internet use have been attempting to use broader samples (Ryan & Xenos, 2011; Valkenburg, Peter & Schouten, 2006; Xu et al., 2011; Gross, Juvonen & Gable, 2002). Ryan and Xenos (2011) used a large sample of Internet users; however, they point out that the online recruitment may have resulted in a larger than normal proportion of heavy Internet users, which they could not control for and may skew results. The majority of these studies are still exclusively focused on adults. Valkenburg, Peter and Schouten (2006) and Xu et al. (2011) both focused on adolescent samples, but neither study mentions Facebook, as Facebook was not the primary social network in use in either of the countries in which the researchers work. Gross, Juvonen and Gable (2002) focused on a sample of seventh graders, but again did not mention Facebook, as the

site had not yet launched at the time of the study. Amichai-Hamburger and Vinitzky (2010) point out that each social group is likely to have their own social norms on Facebook as they do in every day life. Therefore, it seems possible that adolescent behaviour on the site differs from that of adults, making it an important aspect to study. As a result, this will be the focus of the current study.

Specific Rationale for this Study

While the number of studies in this area is increasing, thus far, few have been located in Ireland. In addition, few have focused on adolescents. The studies of personality and online behaviour that have focused on adolescents either pre-date Facebook or focus on other social networks. As has been illustrated above, adolescents are among the growing user base of the site. It is important to study the impact that the increased contact with a larger peer group may have on self-esteem and well-being, as well as the personality factors that relate to the connections they make on Facebook and the intensity of their level of engagement with it.

The Internet is central to the lives of many adolescents. An adolescent who turns 18 this year (2013) was born in 1995, the same year that government funding of the World Wide Web ended, commercial companies took over as Internet Service Providers and began to provide dial-up Internet access, and as a result, the Internet began to become widely available in people's homes (Zakon, 2011). This means that today's teenagers have grown up in a world where the Internet was ubiquitous and do not remember a time before it. It is entirely possible that they approach these technologies in a way unique to them, as "Digital Natives", a term coined by Prensky (2000). He asserts that these adolescents "think and process information

fundamentally differently from their predecessors" (Prensky, 2000, p. 1) and likens it to speaking a foreign language; those who did not grow up with the technologies will always approach them with an "accent", while those who did are fully immersed in the culture, the language and the society of the Internet. This hypothesis does ignore that children and adolescents do not always have equality of access to the Internet and technology, depending on personal interests and other such factors, therefore a comparative approach in studying adolescents' usage of these technologies is very much necessary, instead of regarding them as a homogenous group. This study will compare adolescents and look for differences in their use of Facebook.

The Possible Impact of Social Media on the Formation of a Sense of Self

       According to Erikson (1963, 1975, cited in Dacey and Travers, 1999, p. 283) and many subsequent researchers who built on his ideas, the adolescent years are when many people form their identity, sense of self and personality. This formation of identity is profoundly mediated by the peer group (Cotterall, 1996, p. 23; Conger and Galambos, 1997, p. 177). With such heavy use of new technologies, such as the Internet and social networking sites, it is likely that nowadays, these new technologies could be playing important roles in this discovery of self (Rapacki, 2007). However, social networks offer a very different way of interacting with the peer group than is traditional. The traditional model of peer interactions viewed the adolescent as belonging to first a clique, a small group of peers who share similar interests, and then a crowd, a larger group of several cliques brought together by broadly shared values and norms (Shaffer and Kipp, 2010, p. 617). Reisman and Shorr (1978) report a steady increase of friends throughout adolescence, until this tapers off at late adolescence. Social networking websites such as Facebook allow the 'crowds' and

friendship groups to be larger than ever, with the possibility for the adolescent to form and maintain relationships with a greater variety of people. This may be good for their socialization, exposing them to a diversity of norms and allowing them to choose their identity without being restricted by a clique. It also offers them a place to express a more fluid self-identity (Rapacki, 2007). However, it may also lead to a false sense of belonging to a peer group that is too loosely connected to really fit the definition, without true emotional and social support (Reich, 2010).

In addition to this, the "online disinhibition effect" (Suler, 2004) means that many people will express themselves more openly online than they would offline, regardless of actual anonymity. It seems that without actual face-to-face contact, many people are far less socially inhibited. This can express itself as "benign disinhibition", whereby people disclose personal information but can be extraordinarily kind-hearted and generous to mere acquaintances, with the online mediation serving in a positive sense, or as "toxic disinhibition", which leads to rude, harsh and brutal comments and even bullying (Suler, 2004). For example, on Facebook, adolescents may share intimate details in their profiles with their Facebook friends. While it is likely, with Facebook's characteristic "offline to online" pattern, that most of these people are known to them offline, it is still possible, given the large number of friends the average Facebook user has, that they are people with whom such information would not be shared outside of the site. It also means that, in return, they are opening themselves to be evaluated and commented upon by people who would not traditionally have had this opportunity. In addition, elements of the feedback from such people may never be said in an offline context. Therefore, even if this feedback is "benign" rather than "toxic" (Suler, 2004), it may not be as valuable

as that from people in the real world or those who know the adolescent well. However, it may be taken just as seriously, with broad implications on self-esteem and well-being.

Moreover, the ease of these new ways of interacting means that adolescents are constantly with their peer group, albeit in a virtual way. While it has long been recognised that adolescents often spend more time with their peers than with any other social group (Shaffer and Kipp, 2010, p. 617), with the rise in the ownership of smartphones and the subsequent unrestricted Internet access, many adolescents who use Facebook are never away from their peer group on the site. If adolescents' in-group identity is related to their self-esteem and self-concept (Shaffer and Kipp, 2010, p. 617), this increased contact with the larger group with whom they identify, share and spend their time may be having a powerful impact, and it is that impact this study will attempt to investigate.

Aims and Hypotheses

The specific aim of this study is to investigate what personality traits are related to Facebook use in adolescents and if Facebook use is related to self-esteem and psychological well-being. The study will measure this by the Rosenberg Self-Esteem Scale (Rosenberg, 1965), the short form of Juvenile Eysenck Personality Questionnaire (Pearson and Francis, 1988), and the General Health Questionnaire (Goldberg, 1992). The results around the dimension of Psychoticism are of particular interest, as no research could be found about this dimension in relation to Facebook use. The study will take into account the different ways in which adolescents use the site, using the scales developed by Ellison, Steinfield and Lampe (2007) and Ellison,

Steinfield and Lampe (2011). It will also investigate if there are marked differences in these relationships between adolescents of different ages and genders.

The hypotheses are:

H1: There will be relationships between Facebook use and personality in adolescents.

H2: There will be relationships between Facebook use and psychological well-being in teenagers.

H3: There will be significant differences in the intensity and styles of Facebook use between adolescents of different genders, year group and school type.

H4: There will be significant differences in the personality and well-being of adolescents depending on whether or not they use Facebook and how they access Facebook.

Methodology

Participants

The sample consisted of 167 adolescents, 95 females and 72 males. The adolescents were in second year (n= 85) and fifth year (n= 82) in three different schools, a rural vocational school in Co. Carlow (n= 52), an urban vocational school in Co. Galway (n= 67) and a rural voluntary secondary school in Co. Galway (n= 48). This last school was an all girls' convent school until 2010, and currently only has boys in classes up to third year. The students in the schools came from a variety of backgrounds and academic ability. Participants ranged in age from 13 to 18, with a mean age of 13.82 for second years (standard deviation 0.41) and 16.37 for fifth years (standard deviation 0.58).

The schools were chosen using opportunistic sampling, as the author had access to them through relatives. Within the schools, participants were selected using purposive sampling. As Facebook only allows children aged 13 and over to register, students in second year were chosen as the youngest age group, in order to avoid participants younger than 13. Fifth year was also chosen; this was to ensure an older cohort of students in a way that would avoid disruption to Leaving Certificate classes. The classes within the year groups were chosen at random. Students that were absent on the day the questionnaires were distributed were not included in the study. No incentive was offered to the participants and participation was voluntary. The principals of the schools acted in loco parentis and consent did not need to be obtained from parents.

Design

The study is of a correlational, between subjects, quantitative survey design. The predictor variables included personality variables (Psychoticism, Extraversion, and Neuroticism), age, gender, year group, school type, self-esteem and well-being. The criterion variables were Facebook use variables, including intensity of use, time spent using Facebook, and styles of Facebook use (Initiating, Social Information Seeking and Maintaining). For the between subjects portion of the design, the demographic variables (gender, year group) and method of accessing Facebook were used to investigate whether the groups displayed differences in their interactions with Facebook, using the Facebook use variables derived from the Facebook Intensity and Connection Strategies Scales.

Materials

The materials used in the study consisted of several pen and paper self-report questionnaires. It included a short survey eliciting demographic information about the participants' age, gender, and year in school. It also ascertained whether or not the participant used Facebook, and if so, how they accessed it. The study also used standardised instruments, consisting of the Rosenberg Self-Esteem Scale (Rosenberg, 1965), the short form of Juvenile Eysenck Personality Questionnaire (Pearson and Francis, 1988), the General Health Questionnaire (Goldberg, 1992), the Facebook Intensity Scale (Ellison, Steinfield & Lampe, 2007), the Actual Friends Scale (Ellison, Steinfield & Lampe, 2011), and the Facebook Connection Strategies Scale (Ellison, Steinfield & Lampe, 2011).

Rosenberg Self-Esteem Scale

Rosenberg's Self-Esteem Scale (Rosenberg, 1965) was used to measure the self-esteem of participants. It is a ten-item scale, asking the participant about their level of agreement with the statements given, in relation to their general feelings about themselves. Examples include "On the whole, I am satisfied with myself." and "At times, I think I am no good at all." The items are scored on a four-point Likert Scale, ranging from 3 (strongly agree) to 0 (strongly disagree). Five items are worded negatively and are therefore reverse scored. High scores suggest high self-esteem. Fleming and Courtney (1984) found the scale to have a coefficient alpha of 0.88 and a test-retest correlation of 0.82 ($p < 0.001$), suggesting it has a high consistency and validity.

Junior Eysenck Personality Questionnaire Short Form

The short form of Juvenile Eysenck Personality Questionnaire Revised (JEPQS) was developed by Francis and Pearson in 1988, in order to create a shorter but functional equivalent to the 81 items in the Juvenile Eysenck Personality Questionnaire Revised created by Eysenck and Eysenck, 1975. It is a children's version of the adult Eysenck Personality Questionnaire, and consists of 24 questions with six questions for each subscale. A sample question for Psychoticism is "Would you like other children to be afraid of you?", for Extraversion is "Can you get a party going?", for Neuroticism is "Do you ever feel 'just miserable' for no good reason?" and for Lie Scale is "Have you ever broken any rules at school?". The questions are answered with yes or no, and are scored with one point for each "Yes" answer on nineteen of the questions and for each "No" answer on five of the questions, before being divided into the appropriate subscales. Scores in each subscale range from zero

to six. Pearson and Francis (1988) used Cronbach's alpha to ascertain the internal consistency and reported that for Extraversion it was 0.68, for Neuroticism it was 0.71, for Psychoticism it was 0.58 and for Lie scale it was 0.65, making it less reliable than the long scales, but still serviceable. Correlations with the longer form of the questionnaire (Extraversion (0.82) Neuroticism (0.87) Psychoticism (0.88) and Lie (0.86)) were reported as satisfactory, and Francis considered it an appropriate and adequate alternative when it was impractical to conduct the longer JEPQ.

General Health Questionnaire

The General Health Questionnaire is a measure of psychological well-being, the short form of which was developed by Goldberg in 1992. It has twelve questions, asking participants to indicate their general mental health over the past few weeks, including the examples "Have you recently been able to concentrate on what you're doing?" and "Have you recently lost much sleep over worry?". Items are scored using a four-point Likert scale and summed, to compile a total ranging from 0 to 36. Scores of 11 and 12 are reported as typical, while scores above 15 show evidence of distress, and scores above 20 suggesting severe psychological distress. A study by Baksheev, Rominson, Cosgrave, Baker and Yung (2011) showed that it performed significantly better than chance at identifying psychological distress in adolescents (area under the curve (AUC) = 0.781).

Facebook Intensity Scale and Actual Friends Scale

The Facebook Intensity Scale was developed by Ellison, Steinfield and Lampe in 2007, in order to measure Facebook usage and emotional connectedness. It consists of eight items, six of which are answered using a five-item Likert scale, and two of

which are open-ended. The Facebook Intensity score is computed by calculating the mean of all of the items in the scale, first getting the logs of the two open-ended answers. The scale shows strong internal consistency with Ellison, Steinfield and Lampe (2007) reporting a Cronbach's alpha of 0.83. In 2011, Ellison, Steinfield and Lampe added a question to the scale asking, "Approximately how many of your TOTAL friends do you consider actual friends?". While this question is not used to calculate the Intensity Scale, it can be used to compare against the answers to the question "Approximately how many TOTAL Facebook friends do you have?" A percentage of Facebook friends that are considered actual friends is calculated.

Facebook Connection Strategies Scale

Ellison, Steinfield and Lampe also developed the Facebook Connection Strategies Scale in 2011. This Scale measures distinct types of behaviour on Facebook, initiating contact with strangers, seeking social information about acquaintances and maintaining contact with friends. It asks between four and six questions per subscale, using a five-item Likert Scale for answers. The three subscales are computed by calculating the mean of all of the items in the subscale. Internal consistency is strong for each subscale, with the Cronbach alpha reported as 0.86 for the Initiating Scale, 0.87 for the Information Seeking Scale and 0.87 for the Maintaining Scale (Ellison, Steinfield & Lampe, 2011).

Procedure

Ethical clearance was granted by the Dublin Business School Department of Psychology Board of Ethics. Written consent was granted by the principals of the schools involved, in loco parentis, four months before the research was carried out.

The questionnaires were administered to a randomly selected second year and fifth year class in each of the three schools. The classes were of mixed academic ability. The questionnaires were distributed in class, by teachers or former teachers in the school, and completed under exam conditions to ensure confidentiality. The students were advised that participation was voluntary and they could withdraw without penalty, until the point at which the questionnaires were handed up. They were also advised of the confidential nature of the questionnaire, and requested not to include any personal identifying information. They were asked to answer all the questions as honestly as possible and advised that there were no right or wrong answers. They were informed that if they did not possess a Facebook account, they should not complete the latter portion of the questionnaire. An information sheet was also attached to the questionnaire explaining the above details. None of the students withdrew from the study. Assistance in reading the questionnaire and clarification on the meanings of words, questions or instructions used were provided to the students if necessary. The students were allowed a full 35, 36 or 40-minute class period to complete the questionnaire. The majority finished within 20 minutes, but some students used the whole time allotted. The teachers or former teachers collected the questionnaires and the students were thanked for their time and participation.

A debriefing sheet was also provided with the questionnaire, thanking the students for their participation and providing them with websites and phone numbers to use in the case that completing the questionnaire caused any distress. Copies of the consent letter, explanation sheet, questionnaire and debriefing sheet are included in the appendices.

Data Analysis

The data analysis was conducted with IBM SPSS Statistics Version 21 for Mac, on a

MacBook Pro running OS X Mountain Lion v10.8.2.

Results

Descriptive Statistics

       The sample consists of 167 adolescents, 95 females and 72 males from three different schools, a rural vocational school in Co. Carlow (*n*= 52), an urban vocational school in Co. Galway (*n*= 67), and a rural voluntary secondary school in Co. Galway (*n*= 48). Participants range in age from 13 to 18, with a mean age of 15.07 (standard deviation 1.37). The adolescents are in second year (*n*= 85) and fifth year (*n*= 82). The mean age of the second year students was 13.82 while the mean age of the fifth year students was 16.37. Figure 1 shows the ages of the adolescents in the sample, grouped by year.
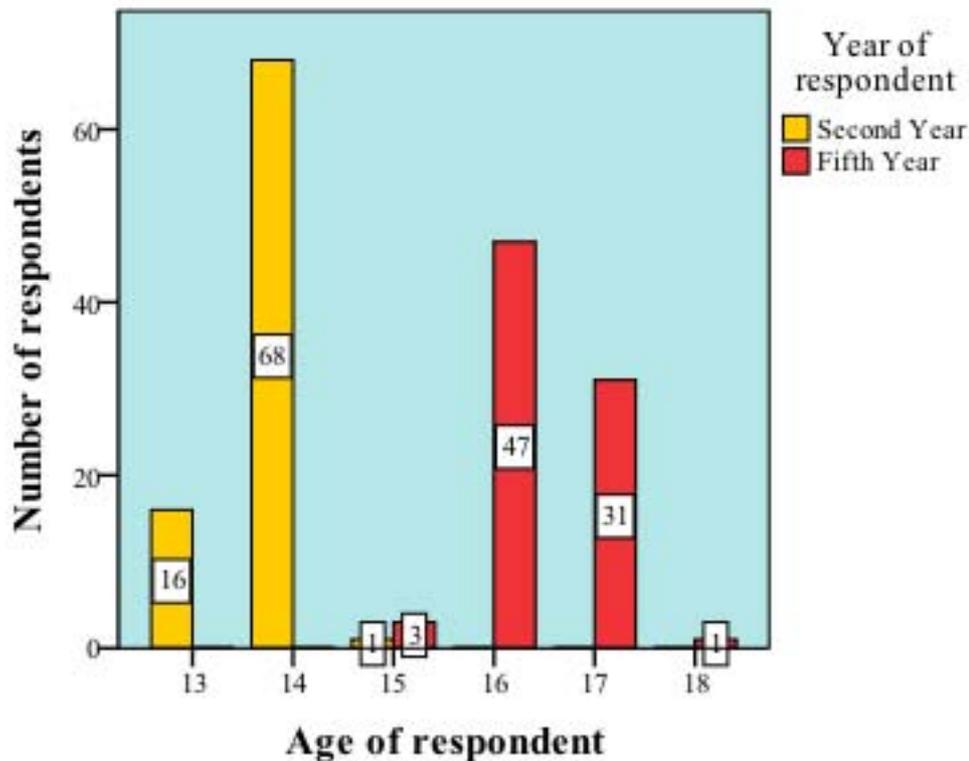
Fig 1: Bar chart showing the ages of respondents by year
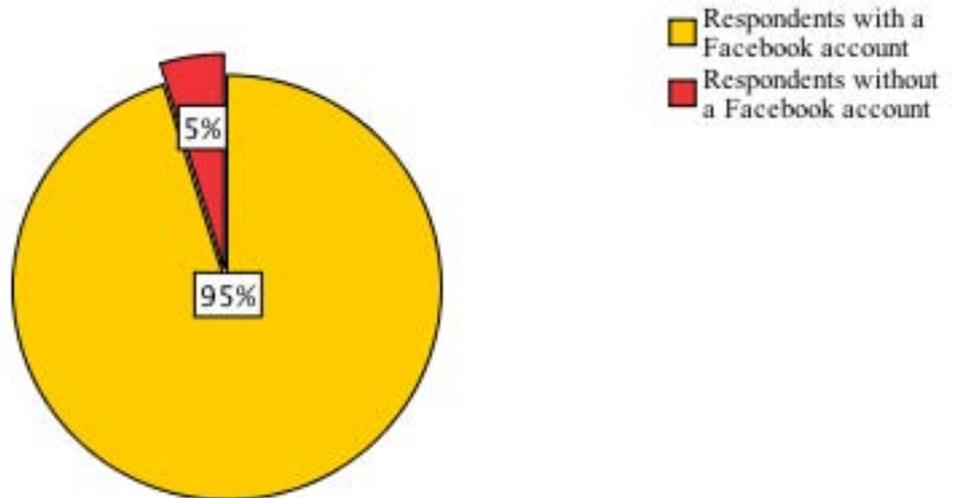
Fig 2: Pie chart showing proportion of respondents with or without a Facebook account

The majority (95%) of the teenagers in the sample have a Facebook account (*n*= 159), as shown in Figure 2. Of these, 61% have access to Facebook on both a phone and a computer (n= 97), while 15% access the site on a computer they owned (n= 24), 18% access it exclusively on a shared computer (n= 28) and 6% access it exclusively on a phone (n= 10), as shown in Figure 3.

Fig 3: Pie chart showing how respondents with a Facebook account access Facebook

Psychological Measures

Table 1 shows the means and standard deviations of the personality and well-being measures used in the study. The mean score for well-being, as measured by the General Health Questionnaire, is 10.57 (SD= 5.37), indicating that the average adolescent in the sample has a good standard of well-being, typical of the mean reported by Goldberg in 1992. The mean score for self-esteem is 20.17 (SD= 5.16). As higher scores indicate a higher level of s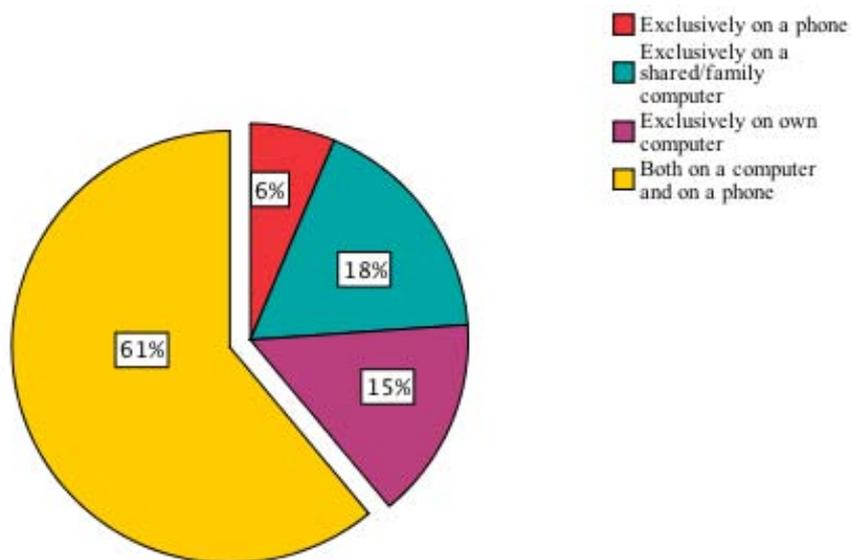elf-esteem, this shows that the sample show a moderately high level of self-esteem, on average. With regard to personality, which was measured on a scale from 0 to 6, the sample demonstrate a low level of Psychoticism (M= 1.26, SD= 1.10), a high level of Extraversion (M= 4.75, SD= 1.42), a moderate level of Neuroticism (M= 2.62, SD= 1.78) and a moderate level of social desirability, as measured by the lie scale (M= 2.42, SD= 1.67).

Table 1 *Descriptive Statistics of Well-Being, Self-Esteem and Personality Measures*

Variable	Mean	Standard Deviation
Well-Being	10.57	5.37
Self-Esteem	20.17	5.16
Psychoticism	1.26	1.10
Extraversion	4.75	1.42
Neuroticism	2.62	1.78
Lie Scale	2.42	1.67

Facebook Measures

The Facebook Intensity Scale ranges from 1 to 6, and the mean score reported for the sample was 3.04 (SD= 0.70), which indicates a moderate level of engagement with Facebook on average. The mean time spent per day on Facebook during the previous week was 85.81 minutes (SD=150.22), and the average number of friends is 643.47 (SD= 290.43), while the sample report that a large minority of their Facebook friends would be considered their actual friends (M=43.92, SD= 31.28). The sample demonstrate a moderate score on the Initiating Scale (M= 2.54, SD= 0.87), a moderate score on the Information Seeking Scale (M= 3.05, SD= 0.71) and a high score on the

Maintaining Scale (M= 4.45, SD= 0.86), indicating that maintaining existing

friendships is the principal use of Facebook.

Table 2 *Descriptive Statistics of Facebook Measures: Facebook Intensity, Usage and Connection Strategies*

Variable	Mean	Standard Deviation
Facebook Intensity	3.04	0.70
Total Friends	463.47	290.43
TFAF	43.92	31.28
TS	85.81	150.22
Initiating	2.54	0.87
Information Seeking	3.05	0.71
Maintaining	4.45	0.86

Note: TFAF = Percentage of Total Friends that are considered to be Actual Friends; TS = Time spent on Facebook per day (in minutes)

Inferential Statistics

H1: There will be relationships between Facebook use and personality in adolescents.

A Pearson correlation coefficient found that there is a weak positive significant relationship between Intensity of Facebook use and Psychoticism (r (148) = 0.21, p = .009, 2-tailed), and Extraversion (r (148) = .22, p = .007, 2-tailed). Psychoticism is also weakly positively related to time spent on Facebook per day (r (150) = .23, p =.005, 2-tailed), initiating contact with strangers on Facebook (r (149) = .25, p = .002, 2-tailed) and seeking social information about acquaintances (r (147) = .32, p < .001, 2-tailed), and moderately positively related to amount of friends (r (151) = .40, p < .001, 2-tailed). A Pearson correlation coefficient also found that Extraversion is weakly positively related to the amount of friends the user has on Facebook (r (150) = .38, p < .01, 2-tailed) and seeking social information about acquaintances (r (146) = .22, p =.008, 2-tailed). Neuroticism is weakly negatively related to the percentage of Facebook friends that are considered to be actual friends

(r (152) = -.19, p =.020, 2-tailed). Therefore the null hypothesis is rejected for these variables.

There is no significant relationship between Intensity of Facebook use and Neuroticism (r (152) = -.00, p = .979, 2-tailed), time spent on Facebook and Extraversion (r (149) = .07, p = .411, 2-tailed) or Neuroticism (r (153) = .11, p = .184, 2-tailed), amount of friends and Neuroticism (r (154) = -.04, p = .644, 2-tailed). Similarly, there was no significant relationship between initiating contact with strangers and Extraversion (r (148) = .10, p = .215, 2-tailed) or Neuroticism (r (152) = -.08, p = .303, 2-tailed), seeking social information about acquaintances and Neuroticism (r (150) = -.08, p = .318, 2-tailed), or maintaining contact with friends and Psychoticism (r (149) = .01, p = .882, 2-tailed), Extraversion (r (148) = -.08, p = .348, 2-tailed) or Neuroticism (r (152) = .02, p = .799, 2-tailed). There is no significant relationship between the percentage of Facebook friends considered to be actual friends and Psychoticism (r (149) = .12, p = .151, 2-tailed) or Extraversion (r (149) = .12, p = .138, 2-tailed). Therefore the null hypothesis is not rejected for these variables. Table 3 shows a summary of these results.

Table 3: *Correlation table showing personality and Facebook variables*

Variable	Psychoticism	Extraversion	Neuroticism
Facebook Intensity	.21**	.22**	-.00
Initiating	.25**	.10	-.08
Information Seeking	.32**	.22**	-.08
Maintaining	.01	-.08	.02
TFAF	.12	.12	-.19*
Total Friends	.40**	.38**	-.04
TS	.23**	.07	.11

* *p* significant at .05 level.
** *p* significant at .01 level.
Note: TFAF = the Percentage of Total Friends that are considered to be Actual Friends; TS = Time spent on Facebook per day (in minutes)

H2: There will be relationships between Facebook use and psychological well-being in teenagers.

A Pearson correlation coefficient found that there is no relationship between psychological well-being as measured by the General Health Questionnaire and intensity of Facebook use (r (154) = .08, p = .299, 2-tailed), initiating contact with strangers (r (155) = -.10, p = .230, 2-tailed), social information seeking (r (153) = -.05, p = .519, 2-tailed), maintaining contact with friends (r (155) = -.03, p = .689, 2-tailed), the amount of time spent on Facebook per day (r (153) = .16, p = .052, 2-tailed) or the amount of Facebook friends (r (157) = .04, p = .633, 2-tailed). A Pearson correlation coefficient found that there is no relationships between self-esteem and intensity of Facebook use (r (149) = -.09, p = .269, 2-tailed), initiating contact with strangers (r (149) = .06, p = .449, 2-tailed), social information seeking (r (147) = .13, p = .105, 2-tailed), maintaining contact with friends (r (149) = .10, p = .202, 2-tailed), the amount of time spent on Facebook per day (r (151) = -.118, p = .148, 2-tailed), the amount of Facebook friends (r (152) = -.10, p = .236, 2-tailed) or the percentage of Facebook friends considered by the user to be actual friends (r (149) = .09, p = .274, 2-tailed).

However, a Pearson correlation coefficient found a weak significant negative relationship between well-being and the percentage of Facebook friends that are considered by the user to be their actual friends (r (155) = -.278, p < .001, 2-tailed), meaning the higher scores on the General Health Questionnaire are related to lower percentages of actual friends to total Facebook friends and vice versa. Table 5 shows a summary of these results.

Table 4: *Correlation table showing well-being and Facebook variables*

Variable	Well-being	Self-esteem
Facebook Intensity	.08	-.09
Initiating	-.10	.06
Information Seeking	-.05	.13
Maintaining	-.03	.10
TFAF	-.28[**]	.09
Total Friends	.04	-.10
TS	.16	-.12

** *p* significant at .01 level.
Note: TFAF = the Percentage of Total Friends that are considered to be Actual Friends; TS = Time spent on Facebook per day (in minutes)

In addition to this, results differ between the older and younger cohort in the sample; in the fifth year group, a moderate negative relationship was found between well-being and the percentage of Facebook friends that are considered by the user to be their actual friends (r (73) = -.47, p < .001, 2-tailed), a finding that was not repeated with the second year group (r (80) = -.11, p = .349, 2-tailed). Again, in the fifth year group, weak significant relationships were found between well-being and the amount of time spent on Facebook (r (75) = .24, p = .034, 2-tailed), between self-esteem and percentage of Facebook friends that are considered by the user to be their actual friends (r (73) = .25, p = .034, 2-tailed), and between self-esteem and time spent on Facebook (r (75) = -.25, p = .028, 2-tailed). These results were not replicated in the second year group, with no relationships found between well-being and the amount of time spent on Facebook (r (79) = .18, p = .113, 2-tailed), between self-

esteem and percentage of Facebook friends that are considered by the user to be their actual friends (r (74) = -.00, p = .977, 2-tailed), and between self-esteem and time spent on Facebook (r (74) = -.08, p = .504, 2-tailed). Table 5 shows a summary of these results.

Table 5: *Correlation table showing well-being and Facebook variables for fifth and second year students*

Variable	Fifth Years		Second Years	
	Well-being	Self-esteem	Well-being	Self-esteem
TFAF	-.47**	.25*	-.11	-.00
TS	.24*	-.25*	.18	-.08

* *p* significant at .05 level.
** *p* significant at .01 level.
Note: TFAF = the Percentage of Total Friends that are considered to be Actual Friends; TS = Time spent on Facebook per day (in minutes)

H3: There will be significant differences in the intensity and styles of Facebook use between adolescents of different genders, year group and school type.

Independent-samples t-tests were conducted on the Facebook variables, grouped by gender and year group. In terms of gender, some differences were found. Males (M= 546.07, SD= 330.94) have a higher number of total friends than females (M= 401.74, SD= 401.74), with the 95% confidence limit showing that the population mean difference of the variables lies somewhere between 50.542 and 238.133. An independent samples t-test found that there was a statistically significant difference between total number of friends of males and females (t(116.56) = 3.05, p = .003). Males (M= 55.17, SD= 30.79) also report a higher percentage of total friends that are considered to be actual friends than females (M= 35.32, SD= 28.98), with the 95% confidence limit showing that the mean difference of the variables lies somewhere between 10.38 and 29.32. An independent samples t-test found that there was a

statistically significant difference between percentage of total friends that are considered to be actual friends by males and females ($t(155) = 4.14$, $p < .001$).

Similar results were found for initiating contact with strangers; males (M= 2.79, SD= 0.86) are more likely to do this than females (M= 2.36, SD= 0.84) with the 95% confidence limit showing that the population mean difference of the variables lies somewhere between 0.17 and 0.71. There was a statistically significant difference between males and females ($t(155) = 3.21$, $p = .002$). Males (M= 3.24, SD= 0.69) are also more likely to use Facebook to seek social information about acquaintances than females (M= 2.91, SD= 0.70) with the 95% confidence limit showing that the population mean difference of the variables lies somewhere between 0.11 and 0.56. An independent samples t-test found that there was a statistically significant difference between the males and females ($t(153) = 2.95$, $p = .004$). The null hypothesis can be rejected with regard to the above variables. Males and females do not differ significantly in terms of intensity of Facebook use ($t(154) = 0.53$, $p = .597$), in the level to which they use Facebook to maintain contact with existing friends ($t(155) = -1.17$, $p = .242$), or in the length of time spent on Facebook per day ($t(156) = 1.36$, $p = .175$). A summary of these results is found in Table 6.

Table 6: *An Independent Samples T-test table displaying the differences between genders for the variables*

Variables	Groups	Mean	SD	t	df	p
Facebook Intensity	Males	3.07	0.74	0.53	154	.597
	Females	3.01	0.67			
Initiating	Males	2.79	0.86	3.21**	155	.002
	Females	2.36	0.84			
Information Seeking	Males	3.24	0.69	2.95**	153	.004
	Females	2.91	0.70			
Maintaining	Males	4.36	0.95	-1.17	155	.242
	Females	4.51	0.79			
TFAF	Males	55.17	30.79	4.14**	155	.000
	Females	35.32	28.98			
Total Friends	Males	546.07	330.94	3.05**	116.56	.003
	Females	401.74	239.86			
TS	Males	104.50	198.43	1.36	156	.175
	Females	71.69	98.47			

* *p* significant at .05 level.
** *p* significant at .01 level.
Note: TFAF = the Percentage of Total Friends that are considered to be Actual Friends; TS = Time spent on Facebook per day (in minutes)

Differences were also found in terms of year group. The second years (M= 2.83, SD= 0.78) are more likely than fifth years (M= 2.23, SD= 0.86) to use Facebook to initiate contact with strangers with the 95% confidence limit showing that the mean difference of the variables lies somewhere between 0.35 and 0.87. There was a statistically significant difference between the year groups (t(155) = 4.67, p < .001). The younger group (M= 3.20, SD= 0.72) are also more likely than the older group (M= 2.89, SD= 0.68) to use Facebook to seek social information with the 95% confidence limit showing that the mean difference of the variables lies somewhere between 0.09 and 0.54. There was a statistically significant difference between the year groups (t(153) = 2.80, p = .006). There was also a significant difference between the year groups in terms of the percentage of total friends that are considered to be actual friends (t(155) = 6.21, p < .001), with the younger group (M= 57.22, SD= 29.34) considering more of their friend network actual friends than the older group

(M= 29.37, SD= 26.63),with the 95% confidence limit showing that the mean difference of the variables lies somewhere between 18.99 and 36.71. Similarly, the second years (M= 112.09, SD= 195.23) spend significantly more time on Facebook per day than the fifth years (M= 58.17, SD= 70.63), with the 95% confidence limit showing that the mean difference of the variables lies somewhere between 8.02 and 99.81 (t(101.52) = 2.33, p = .022). The younger and older groups do not differ in terms of intensity of Facebook use (t(154) = 0.79, p = .431), maintaining contact with existing friends (t(155) = -0.37, p = .712), or number of Facebook friends (t(157) = 1.17, p = .244). Table 7 shows a summary of these results.

Table 7: *An Independent Samples T-test table displaying the differences between year groups for the variables*

Variables	Groups	Mean	SD	t	df	p
Facebook Intensity	Second year	3.08	0.67	.79	154	.431
	Fifth year	2.99	0.73			
Initiating	Second year	2.83	0.78	4.67**	155	.000
	Fifth year	2.23	0.86			
Information Seeking	Second year	3.20	0.72	2.80**	153	.006
	Fifth year	2.89	0.68			
Maintaining	Second year	4.43	0.87	-0.37	155	.712
	Fifth year	4.48	0.86			
TFAF	Second year	57.22	29.34	6.21**	155	.000
	Fifth year	29.37	26.63			
Total Friends	Second year	489.52	300.06	1.17	157	.244
	Fifth year	435.71	279.07			
TS	Second year	112.09	195.23	2.33*	101.52	.022
	Fifth year	58.17	70.63			

* p significant at .05 level.
** p significant at .01 level.
Note: TFAF = the Percentage of Total Friends that are considered to be Actual Friends; TS = Time spent on Facebook per day (in minutes)

A one-way analysis of variance showed that there was a significant difference between the three schools in the level in which they initiated contact with strangers (F (2, 154) = 8,76, p < .001). Post hoc analysis confirmed that that differences are significant in nature between the urban vocational school (M= 2.86, SD= 0.91) and the rural vocational school (M= 2.21, SD= 0.79, p < .001), as well as the rural voluntary secondary school (M= 2.44, SD= 0.75, p= .027). No significant difference exists between the schools in relation to intensity of use (F (2, 153) = 0.27, p = .760), amount of friends (F (2, 155) = 0.50, p = .605), percentage of friends that are actual friends (F (2, 156) = 0.19, p = .827), social information seeking (F (2, 152) = 0.49, p = .614), or maintaining (F (2, 154) = 0.33, p = .720).

H4: There will be significant differences in the personality and well-being of adolescents depending on whether or not they use Facebook and how they access Facebook.

According to the independent samples t-test conducted on the groups, no significant differences exist in the users and non-users of Facebook in terms of well-being ($t(165) = 0.65$, $p = .519$), self-esteem ($t(159) = -1.89$, $p = .061$), Psychoticism ($t(159) = 1.35$, $p = .180$), or Neuroticism ($t(162) = 0.40$, $p = .689$). However, users ($M= 4.80$, $SD= 1.39$) tend to have higher scores on Extraversion than non-users ($M= 3.75$, $SD= 1.67$), with the 95% confidence limit showing that the mean difference of the variables lies somewhere between 0.05 and 2.06. There was a statistically significant difference between the two groups ($t(158) = 2.07$, $p = .040$).

When the way in which the adolescents access Facebook is examined, it can be seen the group that accessed Facebook through more than one medium (i.e., by phone and by computer) have higher scores in Extraversion and Psychoticism. A one-way analysis of variance showed that there was a significant difference between the four groups in terms of Psychoticism ($F (3, 149) = 2.66$, $p = .050$). Post hoc analysis confirmed that that differences were significant in nature between the group who accessed Facebook through more than one medium ($M = 1.44$, $SD = 1.14$) and the group who accessed Facebook only on a shared computer ($M = 0.79$, $SD = 1.14$, $p = .028$). A one-way analysis of variance also showed that there was a significant difference between the four groups in terms of Extraversion ($F (3, 148) = 3.35$, $p = .021$). Post hoc analysis confirmed that that differences were significant in nature between the group who accessed Facebook through more than one medium ($M = 5.01$,

SD = 1.25) and the group who accessed Facebook only on a shared computer (M = 4.14, SD = 1.63, p = .019). Figures 4 and 5 illustrates these results.
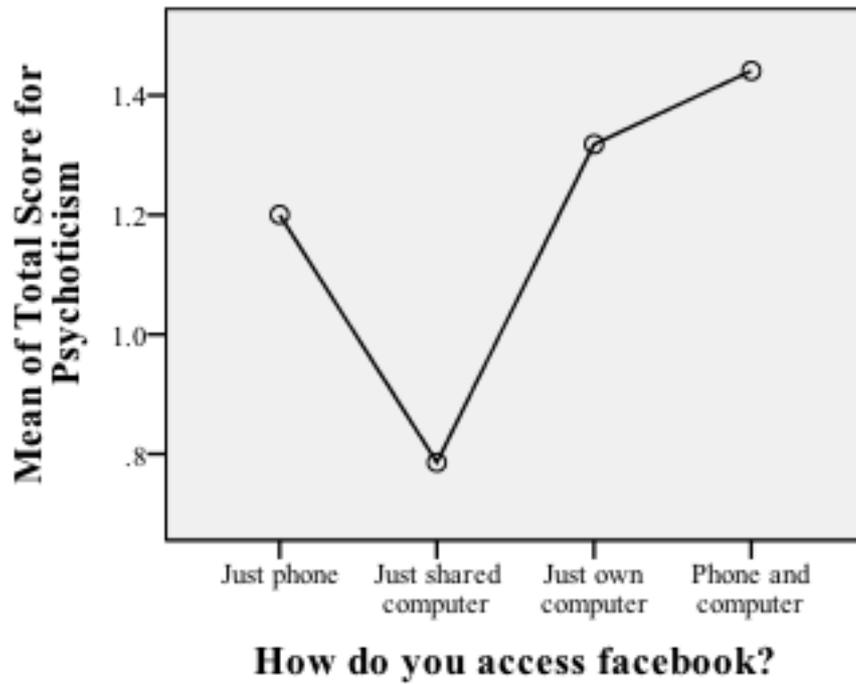
Fig 4: Means plot showing the difference in Psychoticism between the groups who access Facebook through different mediums.

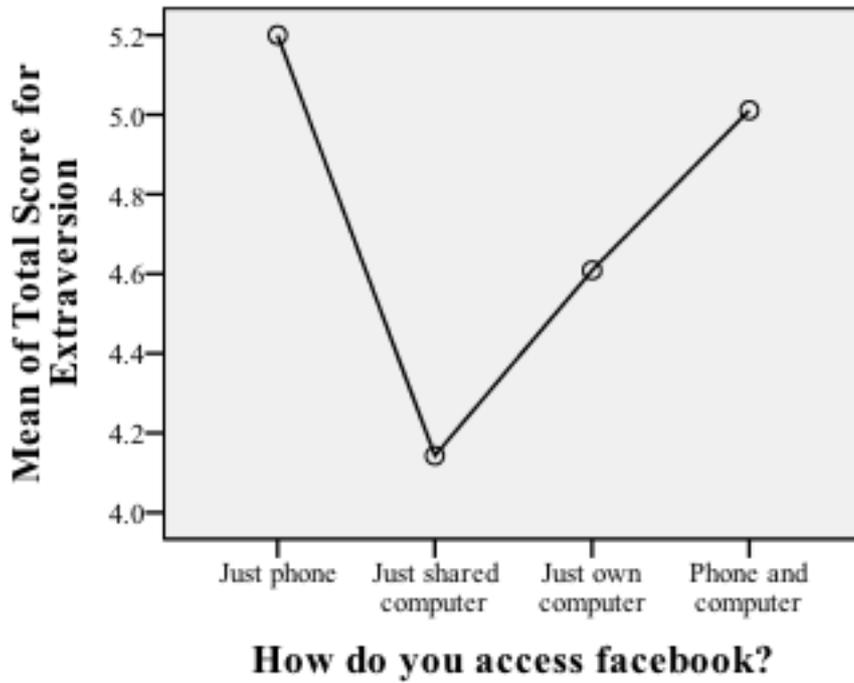*Fig 5: Means plot showing the difference in Extraversion between the groups who access Facebook through different mediums.*

No significant difference exists between any of these groups in relation to well-being (F (3, 155) = 0.49, p = .692), self-esteem (F (3, 149) = 0.11, p = .954), or Neuroticism (F (3, 152) = 0.02, p = .995).

Discussion

The aim of this research was to investigate what personality traits were related to Facebook use in adolescents, and if Facebook use is related to self-esteem and psychological well-being. It focused on adolescents due to their level of involvement in social media, particularly Facebook, and due to the dearth of research on their involvement. It hypothesised that significant relationships would be found between usage patterns (as measured in terms of intensity of use, number of Facebook friends, ratio of friends to actual friends, and the Facebook connection strategies scales: Initiating, Social Information Seeking and Maintaining) and personality, self-esteem and well-being, with differences in the patterns based on gender, year group and school. It was also hypothesised that there would be differences in personality, self-esteem, and well-being based on whether or not the adolescent used Facebook and how they accessed the site.

The Sample: Personality, Well-being and Facebook Use

The sample display a reasonably high standard of psychological well-being and self-esteem, as well as a high level of Extraversion, a low level of Psychoticism, and moderate levels of Neuroticism and social desirability as measured by the Lie Scale. The vast majority of adolescents in the sample use Facebook and they report a moderate level of engagement with the site, as measured by the Facebook Intensity Scale. They report that 43.92% of their Facebook friends were their actual friends, a considerably higher proportion than reported by Ellison, Steinfeld and Lampe in their 2011 study, and spend a mean of 85.81 minutes on Facebook a day.

The sample display a moderate score on the Initiating Scale, indicating that they occasionally used Facebook to meet strangers, and a slightly higher but still moderate score on the Social Information Seeking Scale, indicating that they also occasionally used Facebook for finding information about people they already knew offline. The highest score in the Connection Strategies Scale is on the Maintaining Scale, suggesting that the most common Facebook behaviour is maintaining friendships with existing friends. The behavioural trends are in line with the original findings by Ellison, Steinfeld and Lampe (2011), however the results in the individual scales differ slightly. The means of the Social Information Seeking and Maintaining Scales are slightly lower than the means found in their sample of undergraduates and the mean of the Initiating Scale is higher than the mean found in their sample, suggesting that Facebook behaviours are slightly different in the adolescent population. This could be in part due to the increase in number of friends reported throughout adolescence (Reisman & Shorr, 1978); Facebook could have become the new way in which this increase is facilitated.

Research Findings

H1: There will be relationships between Facebook use and personality in adolescents.

Examination of the relationship between Psychoticism and Facebook use revealed several statistically significant correlations. There is a weak positive relationship between the personality trait and intensity of usage, the amount of time spent on the site, initiating contact with strangers, and seeking social information, and a moderate relationship between the trait and the amount of Facebook friends. To some degree, this mirrors the results found by Tosun and Lajunen (2010), who found

that Turkish students higher in Psychoticism were more likely to make new friends online. The research also supported the hypothesis that Extraversion was related to Facebook use, with positive relationships emerging between the trait and intensity of use, and the amount of Facebook friends. This is consistent with the results found by Correa, Willard Hinsley and Gil De Zuniga (2009) and Ryan and Xenos (2011), yet inconsistent with the earlier study by Amichai-Hamburger, Wainapel and Fox (2002). This could be explained by the different samples used due to the change in usage of the Internet since the 2002 study. When that study was conducted, the most common social use of the Internet was anonymous chatting in chat-rooms, and their sample was composed of these kinds of users; nowadays on social networks, people use their real names and interact with people who already or could possibly soon know them offline as well as online. Time spent on Facebook is not linked to Extraversion, nor is the percentage of Facebook friends considered to be actual friends. The trait does, however, correlate positively with the Social Information Seeking Scale, but not the Initiating Scale. This result seems counter-intuitive, so as the scale is relatively new, further research may shed light on this area.

There were few links found between Neuroticism and online behaviours, although the trait is negatively related to the percentage of Facebook friends that are considered to be actual friends. This is unsurprising, considering that Neuroticism is linked to anxiety and shyness (Mahoney, 2011), and those high in the trait may be more likely to report smaller friendship groups. However based on this, it was interesting that there were no correlations between the trait and the number of Facebook friends, negative or positive. No links were found between Neuroticism and intensity of use or any of the Connection Strategies, supporting the results of

Muscanell and Guadagno (2011), but contradicting the results of Amichai-Hamburger, Wainapel, and Fox (2002) and Hughes et al. (2012). Again, as with Extraversion, the difference in sample and time could account for differences with the first study. Differences with the second could be explained by the differences in the way in which Facebook usage is measured; this study uses the Facebook Intensity Scale and the Connection Strategies Scale, while Hughes et al. used a self-designed 12-question survey, which gleaned a different type of information. In addition, the sample was like that of Muscanell and Gauadagno (2011) in that it mainly consisted to people who were moderate to low in Neuroticism. No links were found between any of the personality traits and the Maintaining Scale, perhaps largely because this connection strategy was common to the majority of the adolescents. This hypothesis, then, can be partially retained.

H2: There will be relationships between Facebook use and psychological well-being in teenagers.

No correlations were found between any of the Facebook variables and well-being or self-esteem in the sample as a whole, apart from a negative correlation between the General Health Questionnaire (GHQ) and the percentage of Facebook friends that are considered actual friends. As a high score in the GHQ means a lower level of well-being, this suggests that the lower well-being is related to a lower amount of actual friends in relation to total friends. As this Facebook variable is also linked to Neuroticism, which is itself negatively correlated with the GHQ, this is unsurprising. Results for self-esteem and well-being differ across the two year groups in the sample, however, with the GHQ negatively correlating with the percentage of

Facebook friends that are considered actual friends and positively correlating with time spent on Facebook per day in the fifth year group. In the same year group, self-esteem is positively correlated with the percentage of Facebook friends that are considered actual friends and negatively correlated with time spent on Facebook. The younger year group show no such relationships between well-being and Facebook variables. This result is supportive to a degree to the study of Chinese teenagers by Xu et al. (2011) but in direct contrast with the results of Kalpidou, Costin and Morris (2011) who linked the amount of Facebook friends to low self-esteem in first year undergraduates, but with high self-esteem in older undergraduates. Again, this hypothesis is supported to some degree, although the relationships are not clear-cut.

H3: There will be significant differences in the intensity and styles of Facebook use between adolescents of different genders, year group and school.

This hypothesis was partly supported, as differences were found between some of the Facebook variables based on gender, with male adolescents reporting a higher number of Facebook friends and a higher percentage of Facebook friends that are considered to be actual friends, a result contradicting that of McAndrew and Jeong (2012), who found that female users have more friends. Their sample, however, was taken from the general population and consisted of more than twice as many female participants as male, which could account for a discrepancy in results. Both studies could also be skewed by their self-report nature; there is little evidence to prove that either sample reported the amount friends accurately. The male adolescents are also more likely to initiate contact with strangers and seek social information about acquaintances on Facebook. This result is consistent with the results of Muscanell and Guadagno (2011), who demonstrated that men were more likely to use social

networks to form new relationships. No differences were found in relation to intensity, or time spent online, in direct contradiction of the results found by Xu et al. (2011), who found that male adolescents used the Internet more frequently.

Again, differences were found in terms of age group, with the younger group spending more time on Facebook per day, and reporting a higher percentage of actual friends. This seems to mirror the results found by McAndrew and Jeong (2012) who found that older users in their sample spent less time on the site, even though their sample's mean age was almost twice that of the current study. The second years were also more likely to use Facebook as a method of initiating contact with strangers and seek social information about strangers, as is discussed briefly above, which could be caused by the older teenagers focusing their attention on maintaining those friends they already have. The groups do not differ significantly based on the amount of friends they have on Facebook, or on the intensity with which they engage with the site, indicating that the differences are largely associated with who they are connecting with on the site. There is no difference between the three different schools in terms of any of the Facebook variables except for the Initiating Scale; students who attended the school in the urban location tend to score higher on this scale, indicating that they are more likely to use Facebook to engage with strangers than students from the rural schools. It is tempting to attribute this to the location of the school and surmise that students from an urban background are more outgoing in terms of their Facebook use, but more demographic information on the students would be necessary before reaching such a conclusion, and perhaps it is an area for further research.

H4: There will be significant differences in the personality and well-being of adolescents depending on whether or not they use Facebook and how they access Facebook.

Again, this hypothesis was partly supported. The only way in which users and non-users differ in terms of personality or well-being is in the area of Extraversion, with users scoring significantly higher on this subscale. As Facebook is a social network, it is unsurprising that more people higher in this trait are more likely to use it. However, as the vast majority of the sample did have a Facebook, it is difficult to extrapolate conclusions from this statistic. The sample also differ according to the way in which they accessed the site, in terms of Extraversion and Psychoticism, with users who accessed the site in multiple ways (i.e. using a phone and a computer) showing significantly higher scores on these subscales than those who accessed the site only on a shared computer. Without supplementary demographic data it is difficult to interpret this result; it is impossible to tell whether this difference is related to socio-economic factors, whereby some adolescents may unable to afford a phone that has Facebook access, or a decision made by the adolescent not to use their phone for Facebook.

Limitations

There are a number of limitations inherent in the design of the study that should be considered. Firstly, the data-gathering was limited to a self-report questionnaire and therefore, the statistics gathered may not be reflective of the true usage of Facebook by the sample, particularly with regard to the time spent on the site and the number of friends. Cross-referencing these answers with actual data from Facebook would lead to a more ecologically valid study, although it would be

extremely difficult and time-consuming. It also may not fully ascertain the true personality and well-being of the sample, as self-report bias, meaning the likelihood of research participants to report socially desirable qualities, may have been at play, although the conditions under which the questionnaires were completed sought to minimise this. In addition, two of the psychometric tests used, the JEPQ-S and the GHQ-12 were abbreviated forms of the originals, due to consideration for the length of time the questionnaire would take for adolescents. While these questionnaires have been tested for their validity and reliability, it is noted that they are less reliable than the longer forms, which may impact to some degree on the results. Finally, as the schools in the study cater for a wide variety of students, more demographic information on participants, for example, socio-economic background, would be helpful in the interpretation of certain results. This could also point to a need for a greater number and variety of participating schools, to ensure participants from a variety of different backgrounds and to make it more generalizable to adolescents in Ireland.

Strengths and implications of the research

      This study focused on the personality and well-being of adolescents with regard to their use of Facebook. There were several significant findings. Of particular interest is the link between Facebook use and Psychoticism, as this is not an aspect of personality that has been much explored in relation to the site. While the relationships are not strong, it is extremely interesting when taken in light of the study by Corcoran, Connolly and O'Moore (2008), which suggests that the trait is related to bullying behaviour. It appears that individuals higher in Psychoticism, who are more likely to bully, are also more likely to be engaging more intensely with social

networking sites. It is possible that this could go some way to explain the prevalence of cyber-bullying and this is an area that further research should explore. Further research is also necessary in linking the Connection Strategies Scales to aspects of personality, as some of the results above seemed unusual, particularly the lack of relationship between Extraversion and the Initiating Scale.

The differences in the relationship Facebook use has with self-esteem and well-being in adolescents of different year groups is also noteworthy, with the well-being older group having a more significant relationship with their use of the site, despite largely spending less time on it. These results, combined with those of Kalpidou, Costin and Morris (2011) may point to a progression in the relationship; with it originally being a positive one, changing to a more negative one in the late teens, before returning to a positive one in the early twenties. However, before this can be more strongly stated, further research using both adolescents and young adults should be conducted. A longitudinal study may be indicated.

Finally, some of the limitations as mentioned above should be addressed in future research, with more attention paid to measureable activities on Facebook, instead of relying on self-report, and more demographic details sought, in order to interpret the results more effectively.

Conclusion

This research does demonstrate that there are links between aspects of personality, well-being and Facebook use, even if those links are not as clear and straightforward as hypothesised. A link between intense Facebook use and

Psychoticism has been identified, along with links between Facebook use and Extraversion. In terms of well-being, Facebook use has been shown to be related to lower well-being in older adolescents. It also shows that adolescents do not approach social media in a homogenous manner; there are differences between age groups, genders and backgrounds, in how they engage and in their preferred connection style. It is to be hoped that further research can build on these results.

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Appendix 1: Questionnaire

Facebook and Irish Adolescents: the relationship between styles of social network use, personality and well-being

My name is Catherine Murphy and I am conducting research in the Department of Psychology in Dublin Business School that explores adolescents' use of Facebook. This research is being conducted as part of my studies and will be submitted for examination.

You are invited to take part in this study and participation involves completing and returning the attached anonymous survey. While the survey asks some questions that might cause some minor negative feelings, it has been used widely in research. If any of the questions do raise difficult feelings for you, contact information for support services are included on the final page.

Participation is completely voluntary and so you are not obliged to take part.

Participation is anonymous and confidential. Thus responses cannot be attributed to any one participant. For this reason, it will not be possible to withdraw from participation after the questionnaire has been collected.

The questionnaires will be securely stored and data from the questionnaires will be transferred from the paper record to electronic format and stored on a password protected computer.

It is important that you understand that by completing and submitting the questionnaire that you are consenting to participate in the study.

Should you require any further information about the research, please contact:

Catherine Murphy at

My supervisor is **Pauline Hyland** and can be contacted at

Thank you for taking the time to complete this survey.

Below is a list of statements dealing with your general feelings about yourself.

If you *strongly agree* with the statement circle **SA**.
If you *agree* with the statement circle **A**.
If you *disagree* with the statement circle **D**.
If you *strongly disagree* with the statement   circle **SD**.

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

General Health Questionnaire

We want to know how your health has been in general over the last few weeks. Please read the questions below and each of the four possible answers. **Circle the response that best applies to you.** Thank you for answering all the questions.

Have you recently:

1. Been able to concentrate on what you're doing?

Better than usual   same as usual   less than usual   much less than usual

2. Lost much sleep over worry?

Not at all   no more than usual   rather more than usual   much more than usual

3. Felt that you are playing a useful part in things?

More so than usual   same as usual   less so than usual   much less than usual

4. Felt capable of making decisions about things?

More so than usual   same as usual   less so than usual   much less than usual

5. Felt constantly under strain?

Not at all   no more than usual   rather more than usual   much more than usual

6. Felt you couldn't overcome your difficulties?

Not at all   no more than usual   rather more than usual   much more than usual

7. Been able to enjoy your normal day-to-day activities?

More so than usual   same as usual   less so than usual   much less than usual

8. Been able to face up to your problems?

More so than usual   same as usual   less so than usual   much less than usual

9. Been feeling unhappy or depressed?

Not at all   no more than usual   rather more than usual   much more than usual

10. been losing confidence in yourself?

Not at all   no more than usual   rather more than usual   much more than usual

11. Been thinking of yourself as a worthless person?

Not at all   no more than usual   rather more than usual   much more than usual

12. Been feeling reasonably happy, all things considered?

More so than usual   same as usual   less so than usual   much less than usual

Please tick or fill in the answer that pertains to you:

What age are you?   _____

What gender are you?   Male   ____

                                   Female   ____

What year are you in?   _____

Do you have a Facebook account? Yes ____

                                       No ____

If yes, how do you access Facebook?

On your phone   ____

On a computer you share   ____

On a computer you own   ____

Below is a list of statements dealing with your general feelings about Facebook.

If you *strongly agree* with the statement circle **SA**.
If you *agree* with the statement circle **A**.
If you *neither agree nor disagree* with the statement circle **N**.
If you *disagree* with the statement circle **D**.
If you *strongly disagree* with the statement   circle **SD**.

Facebook is part of my everyday activity.	**SA**	**A**	**N**	**D**	**SD**
I am proud to tell people I'm on Facebook.	**SA**	**A**	**N**	**D**	**SD**
Facebook has become part of my daily routine.	**SA**	**A**	**N**	**D**	**SD**
I feel out of touch when I haven't logged onto Facebook for a while.	**SA**	**A**	**N**	**D**	**SD**
I feel I am part of the Facebook community.	**SA**	**A**	**N**	**D**	**SD**
I would be sorry if Facebook shut down.	**SA**	**A**	**N**	**D**	**SD**
I use Facebook to meet new people.	**SA**	**A**	**N**	**D**	**SD**
I have used Facebook to check out someone I met socially.	**SA**	**A**	**N**	**D**	**SD**
I use Facebook to learn more about other people in my classes.	**SA**	**A**	**N**	**D**	**SD**
I use Facebook to learn more about other people living near me.	**SA**	**A**	**N**	**D**	**SD**
Approximately how many TOTAL Facebook friends do you have?					
Approximately how many of your TOTAL friends do you consider actual friends?					
In the past week, on average, approximately how much time PER DAY have you spent actively using Facebook?					

Imagine these scenarios and how you are likely to act.

1 – very unlikely
2 – a bit unlikely
3 – neither likely nor unlikely
4 – a bit likely
5 – very likely

Imagine a student in your school whom you've never met in real life or had a face-to-face conversation with. How likely are you to do the following?

1.	Browse their profile on Facebook	1	2	3	4	5
2.	Contact them using Facebook, or by using information from Facebook	1	2	3	4	5
3.	Add them as a Facebook friend	1	2	3	4	5
4.	Meet them face-to-face	1	2	3	4	5

Imagine someone at your school who lives near you who you would recognize but have never spoken to. How likely are you to do the following?

1.	Browse their profile on Facebook	1	2	3	4	5
2.	Contact them using Facebook, or by using information from Facebook	1	2	3	4	5
3.	Add them as a Facebook friend	1	2	3	4	5
4.	Meet them face-to-face	1	2	3	4	5

Think about one of your close friends. How likely are you to do the following?

1.	Browse their profile on Facebook	1	2	3	4	5
2.	Contact them using Facebook, or by using information from Facebook	1	2	3	4	5
3.	Add them as a Facebook friend	1	2	3	4	5
4.	Meet them face-to-face	1	2	3	4	5

Thank you for taking the time to fill out this questionnaire.

If this questionnaire has raised any issues/ feelings that you may want to discuss further you can contact:

- Childline (**1800 66 66 66** or text 'Talk' to **50101**)
- Samaritans (**1850 60 90 90**)
- AWARE (**1890 303 302**)

Should you require any further information about the research, please contact:

<div align="center">

Catherine Murphy at **.**

</div>

My supervisor is **Pauline Hyland** and can be contacted at **.**

Appendix 2: Permission letter

Dear Principal,

My name is Catherine Murphy and I am currently studying for the Higher Diploma in Psychology in Dublin Business School. As part of this course, I must do a research project in an area of psychology.

My research project is entitled 'Facebook and Irish adolescents: the relationship between styles of social media use, personality and well-being'. To investigate this, I would like to distribute a questionnaire, containing a survey on Facebook usage, a test of self-esteem, a test of well-being and a test of personality. I would like to ask for your permission to distribute this questionnaire in your school.

The questionnaire would need to be given to one class of second years and one class of fifth years. It should take no more than 15 minutes to complete. It will take place in late January or early February at a time convenient to you.

All questionnaires will be totally anonymous at all times and data will be kept in a locked filing cabinet and a password protected computer folder.

I can provide a summary of my findings if you wish, and you are welcome to read the final project when it is completed.

Thank you for your consideration and I await your favourable written response. Please contact me if you have any questions or concerns.

Yours sincerely,

Catherine Murphy