

**THE FACEBOOK COMPULSION:
THE RELATIONSHIP BETWEEN SINGAPOREAN ADOLESCENTS'
FACEBOOK USE AND SELF-REGULATION**

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**The Facebook Compulsion:
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and Self-Regulation**

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“At times, our own light goes out and is rekindled by a spark from another person.

Each of us has cause to think with deep gratitude

of those who have lighted the flame within us.”

Albert Schweitzer

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Abstract

Singapore, one of the most connected nations in Asia in terms of telecommunications and Internet use, also has one of the highest percentages (64%) of youths using Facebook in the region. However, research on the patterns and impact of Facebook use amongst Singaporean youths are scarce. This dissertation studied the psychosocial factors (self-regulation, impulsivity, sensation seeking, emotional awareness, emotional regulation, self-efficacy, empathy, social competence, loneliness, shyness, social anxiety, autonomy satisfaction, competence satisfaction and relatedness satisfaction) impacting Facebook use amongst Singaporean youths. Further, it also studied the above variables to identify the protective factors which help adolescents lower their use of Facebook, as well as the risk factors which impact high Facebook use amongst the teenagers. A total of 886 students from primary and secondary schools in Singapore participated in this study, in which the students completed an online survey in their school computer laboratories. Results indicated a high correlation between high self-regulation and less frequent Facebook use supporting the hypothesis that self-regulation is a protective factor against frequent Facebook use. Shyness was correlated with less time spent on Facebook and thus was found to also be a protective factor. Social anxiety, Impulsivity, and Sensation Seeking, were positively related to Facebook use and hence were identified as risk factors contributing towards frequent Facebook use.

CHAPTER 1

INTRODUCTION

The Internet

It is difficult to imagine life without the Internet. It is the source of work, leisure, communication, information, entertainment; the boundary of its use is continually reinvented and seemingly limitless. Improvements in mobility of Internet technology which led to the availability and rise of 3G and now 4G connections see a dramatic increase in the duration and consistency of internet use (Cassidy , 2006; Consumer Reports' Magazine, 2011; Info-comm Development Authority of Singapore, 2013; Internet World Stats, 2012). What was previously a tool used when bound to the desk at home or in office has now been enhanced to be used on pocket-sized devices like smartphones, which can be carried and used almost anywhere, within server range. According to the Internet World Statistics Report (2012), 34.3% of the world population are internet users. Users in Asia make up 44.8% of the total Internet users in the world (Internet World Stats, 2012). However, the penetration rate of the Internet amongst people in Asia is at a current 27.5% (Internet World Stats, 2012). As the spread of internet technology reaches the depth of the Asian population, it is expected that the proportion of internet use in this region would grow exponentially.

Internet use started growing in Singapore when the local government launched Singapore ONE in June 1996, a project aimed at connecting households and public and private spaces in the island to a high-speed broadband network (Teo, 1996). Subsequently, commercial broadband companies, Singtel, Pacific Internet, Starhub and M1 each rolled out their own broadband plans for households, promising competitive rates and rivalled services

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(Teo, 1996). Since then, the Internet has spread into most households in Singapore. A survey conducted by Info-comm Development Authority of Singapore (IDA) in 2013 found that the use of residential Internet broadband connection penetrates to 103.8% of households in Singapore, whereas the wireless broadband connections reaches out to 177% of Singaporeans (Info-comm Development Authority of Singapore, 2013). This means that the country has more wired broadband accounts than households and more than half of Singaporeans have at least two or more accesses to wireless Internet sources.

The birth of the Net-Geners

The increasingly rampant and constant access to the Internet today gives rise to a group of individuals Don Tapscott (2009) calls the “Net-Geners”. In his book ‘Grown up Digital’, Tapscott defines this group of individuals as the “first generation to grow up taking digital technology for granted”, (Tapscott, 2009). Born between 1977-1997, the Net-Geners grew up with computer technology so integrated into their daily lives that Tapscott (2009) likened its necessity as similar to the air they breathe. As a generation, the Net-Geners are characterized by the following, firstly, the expectation for freedom in choice and variety, their customization of tasks and products to suit their different preferences, personalities and needs, their tendency to scrutinize and validate any information that is presented to them, their demand for integrity and their lack of tolerance for deceptive or harmful practices, their participation in work often involving collaboration, their need to be entertained in all areas of life, even in their jobs, and finally, their expectation for constant innovations and changes (Tapscott, 2009). Tapscott also suggests that due to their greater exposure to visual stimulus and more practice in processing simultaneous information from different sources, Net-Geners are more deft with their eye-hand coordination, have better spatial awareness and have greater visual acuity; and are also more effective in multi-tasking. Conversely, Tapscott

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(2009) claims that they are weaker in their critical thinking skills. However, there is insufficient information from long term studies to support these claims.

Social Networking Sites

Whilst the Net-Geners (Tapscott, 2009) grew up with the use of the Internet prevalent in their everyday lives, recent trends reveal Social Networking Sites (SNS) to be amongst the most common uses of Internet, taking up one of the largest percentage of an Internet consumer's time (Boyd & Ellison, 2008; comScore, 2013; Ho, 2009; Lenhart, et al., 2010; Madden, et al., 2013; Synovate, 2010). Social Networking sites are online platforms which incorporate communication and information tools; where individuals can create profiles for themselves, build on their social networks and establish it by making it visible to others, engage in photo or videosharing, articulate their thoughts and emotions themselves through blogging or micro-blogging and chat with their close family and friends, acquaintances and sometimes even strangers (Barker, 2009; Boyd & Ellison, 2008, Pfeil, Arjan, & Zaphiris, 2009). As at May 2013, 72% of online adults in the US use SNS (Brenner, 2013). Of these, the use of SNS is most common amongst youths. 89% of internet users between ages 18-29 are on SNS, compared to the 78% between ages 30-49, 60% of online adults between the age of 50-64 years old and 43% above 65 years old (Brenner, 2013).

The use of SNS in Singapore is as just as pervasive. In a study conducted by comScore in March 2013, Singaporeans use up 16.1% of their time on their work and/or home personal computers (PCs) accessing SNS, with each session lasting an average of 38.46 minutes (comScore, 2013). This makes Singapore the 6th out of the 11 countries in Southeast Asia with the highest percentage of users accessing SNS via work and home computers (comScore, 2013). However, because Singapore has largest percentage of 62% of users in Southeast Asia with 3G networks connections on their smartphones, ("Mobile Internet,"

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2011), a comparison of the percentage of users accessing SNS via work and home computers may not fully describe the extent to which the use of SNS has permeated into the lives of Singaporeans. A survey of 11 Young Asian Internet markets with respondents aged from 8 to 24 years old found that Singaporean youths have the highest ownership of laptops and mobile smartphones and mainly access the Internet through these devices rather than from their home or work PCs (Synovate, 2010).

The most commonly used SNS to date is Facebook. As of October 2013, Facebook reaches out to 1.5 billion persons around the world, which is 72% of world online users (Socialbakers, 2013). Founded in 2004 by a then-21 year old Mark Zuckerberg, Facebook was a SNS site targeting a niche community of Harvard students (Cassidy, 2006). Subsequently, membership expanded to include students of other institutions in the US, and then around the world. Today, Facebook accepts registration from anyone who claims to be above thirteen years old. 'Claims to be', because there is no legitimate way of verifying a user's age other than through the birthdate the user declares to register for a Facebook account. Based on a survey conducted by Consumers' Report Magazine conducted in 2011, 7.5 million Facebook users are aged below thirteen years old. Of this, more than 5 million are below 10 years old and have accounts which are unsupervised by their parents (Consumer Reports' Magazine, 2011).

As of September 2013, Facebook is the most commonly accessed SNS in Singapore, with a penetration rate of 76.55% of the country's online population. This makes Singapore the 51st country in terms of Facebook penetration rate (Socialbakers, 2013). Consistent with the trend around the world, Facebook is predominantly used by Singaporean youths, with 64% of users below the age of 34 years old (Socialbakers, 2013).

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Intense use of Facebook have been connected to social problems like trouble with the law, bullying, sexual predators, divorces, identity theft and more (Agence France-Presse, 2013; Ho, 2009; Hinduja & Patchin, 2008; Junco, 2012b; “Mobile Internet,” 2011). There have been increasing reports of people getting into trouble due to their posts on Facebook. Most recently in Singapore, a 13 year-old boy was arrested for threatening to “plant bombs in Marina Bay Sands” in a Facebook post (Agence France-Presse, 2013). Prior to this, there were two other similar incidences in 2012, the first where an PRC student studying in Singapore was fined for calling Singaporeans “dogs” on his Facebook account (“Chinese NUS scholar, ” 2012) and the second, where an Australian was fired from her job and faced wide public reproach for her criticisms of the Malay community in Singapore on Facebook (Lim, 2013).

Threats related to high frequency of Facebook use amongst adolescents

Amongst youths, studies have found that high frequency of SNS use is also related to high risk online activities like disclosure of personal information and face-to-face offline meetings (Christofides, Muise, & Desmarais, 2009; Liao, Khoo, & Ang, 2005). High Facebook usage is also related to greater risks of cyberbullying and cybervictimization (Berson, Berson, & Ferron, 2002; Blair, 2003; Hinduja & Patchin, 2008; Kwan & Skoric, 2013). A meta-analysis conducted by Tokunaga (2010) found that 6.5 to 72 per cent of teenagers around the world experience cyberbullying. In a study conducted in Europe, 18% of online children have experienced a form of cyberbullying (Hasebrink, Livingstone, Haddon, & Olafsson, 2009). As widespread as it is damaging, cyberbullying allows the perpetrator to expose his target’s victimization to a wider audience (Dooley, Pyzalski, & Cross, 2009). The humiliation involved may also be present for a long period of time, even forever, as the victims is unable to exert control over removing the bully’s posts (Willard, 2007). While Facebook is a popular medium through which teenagers pursue friendship and

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approval from individuals as well as seek membership into communities congruent with their self-identity (Boyd, 2008), in some situations, these individuals and communities they seek out are also sources of harsh criticism and bullying (Valkenburg, Peter, & Schouten, 2006). In a study on Singaporean youths aged between 13 to 17 years old, a moderately strong positive relationship was found between school bullying and Facebook bullying, as well as between school victimization and Facebook victimization. (Kwan & Skoric, 2013) This means that teenagers who seek out friendship and approval online in place of their less than satisfactory real-life friendships are also the ones who face higher risks of cyberbullying.

Increase in Facebook use was also found to be negatively related to academic performance and engagement in other activities in school, e.g. co-curricular activities (Junco, 2012a) . In a study by Kirschner and Karpinski (2010), it was found that students who are high frequency Facebook users are more likely to use Facebook simultaneously while studying. The study found that these Facebook users end up spending less time studying and score lower on their GPA compared to non-users. Further, they also found that negative impacts of high Facebook use on school performance are strongly related to factors such as procrastination, distraction and poor time-management.

Conversely, studies have found that lower Facebook use may lead to better real-life relationships, lower exposure to high-risk online behaviours, higher productivity and better performance in school (Berson, Berson, & Ferron, 2002; Christofides, Muise, & Desmarais, 2009; Junco, 2012a; Junco, 2012b; Kirschner & Karpinski, 2010). However, in spite of the dangers surfacing from frequent Facebook usage, the number of Facebook users around the world continues to rise. What causes frequent Facebook users, especially adolescents, to continue using the SNS intensively in spite of its risks?

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There has been growing amount of research studying the different patterns of Facebook use by different groups of people as well as the repercussions of frequent Facebook use (Baker & Oswald, 2010; Bargh, McKenna, & Fitzsimmons, 2002; Christofides, Muise, & Desmarais, 2009; Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011; Livingstone S. , 2008, Williams & Merten, 2008). None of these studies have been conducted on Singaporean adolescents. Further, with the burgeoning use of Facebook amongst the increasingly computer-literate population of teenagers, there is still a genuine scarcity of research on unique risk and protective factors amongst adolescents which influence the frequency, patterns and purposes of their Facebook use. The frequency of use is an important factor because studies have revealed a close relationship between excessive Facebook use and high-risk online activities, cyberbullying and poor academic performance (Berson, Berson, & Ferron, 2002; Christofides, Muise, & Desmarais, 2009; Junco, 2012b; Kirschner & Karpinski, 2010).

Protective and Risk Factors

In several studies on excessive Internet use, protective factors were defined as physical, emotional or psychological characteristics of an individual which promote adaptive functioning, whereas risk factors were described as factors which increase the likelihood of individuals engaging in maladaptive behaviours (Jessor & Jessor, 1977; Martinez-Torteya, Bogat, von Eye, & Levendosky, 2009). Amongst the risk factors of excessive Internet use identified were poor self-regulation, loneliness, shyness, social anxiety, low self-esteem and self-efficacy (Amichai-Hamburger & Ben-Artzi, 2003; Amichai-Hamburger & Vinitzky, 2010; Baker & Oswald, 2010; Barker, 2009; Caplan, 2007) and protective factors against frequent Internet use were high self-regulation, self-esteem and self-efficacy (Caplan, 2003; Caplan, 2007; LaRose, Lin, & Eastin, 2003; Neo, 2008) . However, these studies looked more into the use of the Internet for gaming (Neo, 2008), Internet chatting (Amichai-

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Hamburger & Ben-Artzi, 2000; Amichai-Hamburger & Ben-Artzi, 2003; Liao, Khoo, & Ang, 2005) and other SNS like MySpace (Patchin & Hinduja, 2010; Pfeil, Arjan, & Zaphiris, 2009).

Several personality and psychosocial factors have been identified in research as being related to the frequency of Facebook use. Personality factors are the intrinsic characteristics of individuals which affect their motivation, behaviour and emotions towards people and situations in their environment. Personality traits like extraversion and neurotism are closely linked to the frequency of Facebook use. Some researchers argue that individuals who score high on extraversion and neurotism are more likely to engage in Facebook frequently (Amichai-Hamburger & Vinitzky, 2010). Others however, opine that introverted individuals are more prone to intense Facebook use to compensate for their lack of social activity in real life (Amichai-Hamburger & Ben-Artzi, 2000; Amichai-Hamburger & Ben-Artzi, 2003). Psychosocial factors relates to an individual's view of themselves as well as their perception of themselves in relation to their relationships with others. Kalpidou , Costin, & Morris (2011) found that loneliness, shyness and social anxiety are psychosocial factors related to high frequency of Facebook use amongst individuals. There is a dearth of research however, exploring the influence of a student's perception of their personal strengths and basic needs satisfaction with the frequency of their of Facebook use.

Self-regulation as a protective factor

Further, studies of compulsive behaviour have found self-regulation to be a protective factor preventing compulsions and addictions (Neo, 2008). Several studies have suggested a link between self-regulation and problematic internet use (PIU), where self-regulation is suggested as a protective factor against PIU (LaRose, Lin, & Eastin, 2003; Lam & Peng, 2010; Livingstone & Brake, 2009; Neo, 2008). Defined as the ability to deploy, monitor,

inhibit, persevere and adapt one's behaviour, emotions, attention and cognitive strategies in an attempt to attain self-persevering goals (Kuhl, 2000; Neo, 2008), there has also been several studies which linked self-regulation to the use of Facebook, where a weaker measure of one's self-regulation is seen as a factor causing an increase in the use of Facebook (Baker & White, 2010; Stefanone, Lackaff, & Rosen, 2011; Thadani, 2013). Thadani (2013) found that a deficient self-regulation changes one's perception of the frequency his Facebook use, which indirectly influences Facebook use as a habit. Research connecting self-regulation and Facebook use, however, remains scarce and studies on the patterns of Facebook use in Singapore as related to self-regulation is currently unavailable.

Purpose of the Study

Excessive and inappropriate use of the SNS brings along with it various social problems. However, with the greater weighted benefits of social networking to most individuals and with increased access to the internet via smartphones, tablet PCs and laptops, a growth in the use of SNS like Facebook is inevitable.

The study aims to find out if self-regulation amongst adolescents in Singapore is a protective factor against frequent Facebook use. It further aims to examine the relationships between frequency of Facebook use, self-regulation (as measured by the self-regulation scale), or the lack of it (as measured by impulsivity and sensation-seeking scales) and psychosocial factors of personal strengths (as measured by emotional regulation, emotional awareness, empathy, self-efficacy and social competence scales); basic needs satisfaction (as measured by autonomy satisfaction, relatedness satisfaction and competence satisfaction subscales); loneliness; shyness and social anxiety. It also aims to identify the protective and risk factors contributing to higher Facebook use

Research Questions

The research questions addressed in this study are as follows:

Research question 1.

What protective factors in terms of self-regulation, personal strengths and basic needs satisfaction are related to lower use of Facebook?

Research question 2.

What are the risk factors in terms of impulsivity, sensation seeking, shyness, social anxiety and loneliness are related to Singaporean youths' high use of Facebook?

Significance of the Study

Proliferated use of Facebook amongst Singapore youths has created a new culture of friendship, communication and self-expression. High frequency use of SNS, however, brings along with it numerous social problems. There is a lack of research on the characteristics related to high-frequency vs. low frequency Facebook use amongst teenagers in Singapore. To date, there have also been no studies of the psychosocial characteristics influencing the frequency of Facebook use amongst the Singaporean adolescent population. The main factors in this study are the frequency of Facebook use, self-regulation and psychosocial factors; personal strengths, basic needs satisfaction, loneliness, shyness and social anxiety. An adolescent's level of self-regulation is seen to affect his perception of the value of his Facebook use.

The study aims to find out how these self-regulation and psychosocial factors impact the frequency of Facebook use amongst Singaporean adolescents. It hopes to identify protective and risk factors that can impact of the frequency of Facebook use amongst Singaporean adolescents. For the purpose of this research paper, protective factors will be

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defined as emotional or psychological features of an individual which stimulates adaptive functioning, whereas risk factors will refer to emotional or psychological factors which increase the likelihood of individuals engaging in risky behaviours (Jessor & Jessor, 1977; Martinez-Torteya, Bogat, von Eye, & Levendosky, 2009) The maladaptive behaviour we are studying in this paper will be the excessive use of Facebook amongst adolescents.

This study serves to guide parents on understanding the reasons and motivations for high Facebook use amongst adolescents. Since frequent SNS usage is strongly correlated with high risk online behaviour (Junco, 2012a; Kalpidou, Costin, & Morris, 2011; Steinberg, 2004), with the knowledge of protective and risk factors influencing frequency of Facebook use, parents are able to work towards reducing their teenage child's Facebook use by building on protective factors and reducing the impact of risk factors on their child.

The significance of this study is not only limited to parents. School educators, social service practitioners, youth workers and counsellors can also benefit from identifying the protective and risk factors of low vs. high frequency Facebook use. They can work towards identifying the common needs for Singaporean adolescents based on the psychosocial factors related to frequency Facebook use and work towards encouraging other ways in which these needs can be met in a safer, monitored and more productive environment. The study is also significant to Singaporean youths engaging in Facebook use. With awareness of their risk factors contributing towards their high frequency use and knowledge of protective factors that may influence less frequent use of Facebook, Singaporean youths can consciously work towards strengthening their protective factors. Consequently, they can gain mastery over their Facebook use, which may lead to better real-life relationships, lower exposure to high-risk online behaviours, higher productivity and better performance in school.

Outline of the Study

In this study, the first chapter gives an overview of the issues concerning the topic of study. Chapter 2 will present and critique different information available in the literature on patterns of Facebook use, psychosocial factors as well as protective and risk factors related to Facebook use. It will also present an outline of the hypotheses the study investigates. Chapter 3 will state the methodology applied in data collection and analysis. It will also discuss the validity and reliability of the instruments used. Chapter 4 reports the results of the statistical analysis conducted to find out whether the hypotheses presented earlier are supported or otherwise, in order to answer the research questions established. Lastly, Chapter 5 discusses the findings reported and describes the implications of the findings, the limitations of the research as well as recommendations on future research to expand on this area of knowledge.

CHAPTER 2

LITERATURE REVIEW

Studies have shown that SNS like Facebook is one of, if not the most important online platform mediating adolescent peer relationships and socialization (Livingstone, 2008; Williams & Merten, 2008). However, it is not the first online application used to maintain current and create new friendship. Before the advent of SNS, internet users, especially teenagers, have used chatting platforms, dating sites, and online discussion forums to meet new friends.

Facebook's popularity amongst adolescents lies in its function. It provides a platform that:

“represents ‘their’(adolescent’s) space, visible to the peer group more than to adult surveillance, an exciting yet relatively safe opportunity to conduct the social psychological task of adolescence – to construct, experiment with and present a reflexive project of the self in the social context” (Livingstone S. , 2008, p. 396).

According to developmental theorist (Eriksen, 1968), the adolescent, at this stage of development, seeks out friendship and membership into a community, not only to fulfil their need for companionship but also to establish their sexuality and to explore the possible identities they wish to assume. This is also the period where the adolescent attempts to form an autonomous identity, including their sexual identity, which needs to be distinct, yet valued and accepted by the society, “which balances the difference between critical judgement, acceptance, trust, and finally unity with societal expectations” (Livingstone S. , 2008, p. 397). In the process of honing the identity, the youth must test it out on safe platforms first. These

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'safe platforms' include, first and most importantly, amongst peers in school, within their family, and in this age, on the online realm (Boyd 2008; Livingstone, 2008). By having the freedom to approve or reject 'friendship requests' and adding the friends they wish to, a teenager can also write his/her community into being, allowing them to portray their identity to a selected group of individuals they wish to seek approval from (Boyd, 2008).

It has been found that adolescents participate in SNS mainly by expressing themselves through their profile updates, sharing their pictures, checking through the profiles of others, making public comments on the others' pages, commenting/'liking' status updates or pictures posted by their friends and sending private messages to others (Boyd, 2008; Lenhart, 2009; Patchin & Hinduja, 2010; Williams & Merten, 2008;). Studies have demonstrated many positive effects of the use of SNS among teenagers. These include the provision of a platform for teenagers to innovate, socialize, express themselves as well as an avenue for them to practice impression management (Williams & Merten, 2008). However, there are also concerns regarding the effect of the use of SNS on adolescents. The worrying trend of SNS use is captured in the emphasis of research studies conducted over the years. In the earlier years of SNS, studies are mainly focused on the reasons for SNS use amongst teenagers; trends of SNS use, online profiles and styles of communication (Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011; Williams & Merten, 2008). Recent studies, however, are increasingly focused on the risks of SNS on the psychosocial wellbeing of individuals, especially on teenagers (Ho, 2009). While some use these sites to establish and maintain social ties, experiment with the presentation of their identity, there are groups of youths who engage in various forms of risk taking behaviours like offline meetings with online friends, bullying, identity theft and engaging in sexual behaviours (Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011; Hope, 2007; Liau, Khoo, & Ang, 2005; Livingstone, 2008).

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There has also been increasing attention paid on the unsupervised use of SNS amongst underage children (Livingstone, Olafsson, & Staksrud, 2011).

Compulsive SNS use and Internet Addiction

Another focus of concern in recent studies of internet addiction is the excessive use of SNS; its contributing factors as well as its effect on users (Lenhart & Madden, 2007; Livingstone, 2008; Sharif & Sargent, 2006; Vandewater, Shim, & Caplovitz, 2004). However, limited research has been conducted to explore the decision-making processes involved in an adolescent when they engage in the frequent use of this technology. Further, no research has drawn a parallel between the compulsive use of SNS like Facebook to Internet Addiction. Addiction to the internet, another recent phenomenon amongst the “Net-Geners”, has been likened to have the same detrimental effects as addiction to drugs and gambling has on users, such as academic failure, deteriorating performance at work and familial discord. Several studies drew a close similarity between Internet addiction and pathological gambling; and using the pathological gambling model, these researchers view internet addiction is seen as an impulse control disorder, without the use of an intoxicant. (Young, 1998).

Factors Affecting Frequency of Use

Human beings can function proactively, being their own agents of change. Deci and Ryan (1985) suggest that an individual's behaviour is motivated by forces along a continuum where on one end, the behaviour is completely autonomous and purely based on one's own choice while on the other end, the behaviour is controlled by external forces. For example, a student may be reading a book because he genuinely enjoys reading on the topic. This is an example of an autonomous behaviour. Conversely, the student may be reading the book because he has to write up a review for school as homework. This would be controlled

behaviour. Having autonomy means that human beings can function proactively being their own agents of change. Similarly, people put in effort to change themselves or their behaviour so as to function better in the society. Whether it is clinching the first class honours degree, becoming a pro athlete or winning a presidential campaign, unique differences in human contexts and social experiences act as catalysts for self-motivation for personal growth. Differences in motivation occur between and within a person, causing some people to be more self-determined and act in more proactive manner. Theories such as the Self-efficacy (Bandura, 1977), Theory of Planned Behaviour (TPB) (Ajzen, 1991) and Self-determination (Deci & Ryan, 1985) have suggested the various ways in which an individual is motivated towards success or stopped someone from functioning optimally. As previously mentioned, while the use of Facebook brings about positive influences in an individual in terms of the ease and convenience at which communication is facilitated in order to build on one's social network, the opportunities for self-expression as well as its role as a platform for identity-formation, there are also several detrimental effects involving frequent Facebook use. It was then asked, with the negative impacts of frequent Facebook use, why are some individuals still motivated to pursue this behaviour at almost compulsive levels?

Motivation for Facebook use

Since Facebook serves the needs of the adolescent at the current stage of their development, adolescents would find the use of Facebook highly motivating (Baker & White, 2010; Junco, 2012a). According to Wigfield, Byrnes, & Eccles, (2006), the motivation to perform a task depends on its value to the individual. In order to establish the value of a behaviour or action, individuals measure the perceived attainment, intrinsic and utility values of the behaviour; and balance these out with the cost of the behaviour. The *attainment value* of a task refers to how important its performance would influence the individual's self-schema. A behaviour or task that is perceived to have high attainment value would directly

contribute to one's self-schema. *Utility value* measures how quickly the performance of the task would fulfil the individual's current and future goals. *Intrinsic value* on the other hand, refers to the individual's perception of how enjoyable the behaviour is.

Another theory motivation of commonly utilised is the Theory of Planned Behaviour (TPB). TPB have been applied to a variety of behaviours of adolescents, including computer-mediated behaviours like instant messaging and the use of SNS (Baker & White, 2010; Hamilton & White, 2008; Pelling & White, 2009; Yaobin, Zhou, & Wang, 2009). According to Ajzen and Madden (1986), TPB suggests that an individual's *intention* directs his motivation to perform certain behaviours or actions. Therefore, the individual would be more motivated to engage in the behaviour when it is in line with his intention. Ajzen and Madden (1986) further explained that intention, as applied in this theory, comprises of;

1. The individual's attitude towards the task, usually dependent on how pleasurable and easy the behaviour is for him.
2. The subjective norm, or the influence from the individual's community, especially his peers, towards performing, or not performing the behaviour.
3. Perceived Behavioural Control (PBC), the amount of control the individual thinks he has over performing the behaviour.

Therefore, if an individual perceives a task as pleasurable and manageable, something that his friends are also doing and believes he has control over when he starts and stops engaging in the behaviour, he would be highly motivated and likely to perform it (Ajzen, 1991). In a study by Pelling and White (2009), the three variables of TPB; *attitude*, *subjective norm* and *PBC* along with additional variables, self-identity and belongingness were compared with the use of SNS amongst a group of adolescents between the ages 17 to 24 years old for a week. The research found attitude towards SNS, normative influences and

self-identity factors to be the strongest predictors of high SNS use amongst individuals. However, several studies and meta-analyses have found that TPB's original factors are insufficient in measuring motivation, with a large proportion of the variance in correlation values between the measures and intensity of internet use amongst individuals remaining unaccounted or confounded by other variables (Ajzen 199; Armitage & Conner, 200; Baker & White, 2010; Terry & Hogg, 1996). It has been proposed that more measures should be included in the TPB in order to make it sensitive to the unique intentions and motivations for behaviour amongst different individuals (Ajzen, 1991; Terry & Hogg, 1994).

Self-regulation, Impulsivity and Sensation seeking.

While the theories of motivation and TPB have been applied with the use of Facebook in research, self-regulation remains a relatively unexplored theory for explaining the pattern of Facebook use. Individuals often need to perform tasks which elicit little immediate positive feelings or at times, even negative feelings, and that are accompanied by few immediate tangible incentives in the environment. The ability to delay immediate gratification by performing tasks with greater long-term benefits is often prescribed as recipe towards success. Success, then, is measured by the ability to achieve one's long term goals which are in line with the societal views of achievements. An example would be to study hard for months before an examination, in place of playing or socializing, so as to achieve Straight A's in an examination. In order to avoid procrastination or quitting on a challenging and less enjoyable task, one must motivate oneself. Self-motivation, then, can be considered a form of self-regulation (Cervone, Shadel, & Smith, 2006). The different processes involved in self-regulation are addressed in Kuhl's Personal Systems Interactions (PSI) theory (Cervone, Shadel, & Smith, 2006; Kuhl, Kazen, & Koole, 2006). PSI distinguishes between two aspects of self-regulation: labelled self-control (motivation) and self maintenance (Cervone, Shadel, & Smith, 2006; Kuhl, 2000; Kuhl & Koole, 2004; ; Kuhl et al, 2006).

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Self-control is the act of inhibiting impulsive actions which an individual perceives to give instant gratification, in order to maintain a focus on one's longer-term goals. This function is served by psychological systems that maintain mental images of the long-term goals. These systems also detect inconsistencies between current behavior and the goals. The other function, self-maintenance, then guides the individual towards activities that are congruent with one's values and ambitions (Dimaggio, Giuseppe, Popolo, Semerari, & Carcione, 2006).

Adolescents are commonly associated with more risk-taking behaviours. Psychosocial processes that influence decision making and moderate risk taking behaviours, such as controlling impulsivity, emotional regulation, delay of gratification and resistance to peer influence continue maturing after adolescence, into young adulthood. (Steinberg, 2004). Jessor & Jessor (1977) suggested that self-regulation may protect young people from performing risky behaviours. The inability to control impulsivity has been linked with gambling, drug addiction, smoking, internet addiction, and even failure to exercise (Dombrowski & Luszczynska, 2009). High self-regulation, on the other hand, has been linked with better school results, high level of prosocial behaviours and less externalizing and internalizing behaviours (Moilanen, 2007).

Further, Lin & Tsai (2002) conducted a study comparing the level of sensation seeking amongst Taiwanese teenagers who are dependent and not dependent on Internet use. While they found that Internet dependents rated highly on overall sensation seeking and disinhibition than non-dependents, they rated similarly for the life experience and thrill and adventure seeking subscales.

Successfully maintaining self-regulation often times are accompanied by feelings of self-determination (Deci & Ryan, 1985).

Self-Determination.

The self-determination theory posits that in order to ensure an individual's wellbeing, his basic needs for autonomy, competence and relatedness have to be satisfied (Ryan & Deci, 2000). These three factors are identified as the level of an individual's the basic needs satisfaction. Autonomic satisfaction is related to one's level of satisfaction towards the choices, interests and potential for growth that he has. Autonomy satisfaction has been closely linked to relationship outcomes, where high autonomy satisfaction is found to produce increased positive behaviours and decreased negative emotions in a relationship as well as more positive feelings about oneself (Knee, Patrick, Vietor, Nanayakkara, & Neighbors, 2002). Competence satisfaction is related to one's satisfaction about his ability to bring about desired changes and outcomes based on his actions (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). Relatedness satisfaction is one's feeling of having formed close and connected relationships with significant others (Deci & Ryan, 2000). Research by Reis et al. (2000), show that the best predictors for one's satisfaction in relatedness are social activities that promote meaningful talk and the feeling of being understood and appreciated by communication partners.

The level of an individual's self-determination has been found to predict his level of intrinsic motivation (Zuckerman, Porac, Lathin, & Deci, 1978). In their study, Zuckerman et al. (1978) also found that individuals who score highly on their level of self-determination are likely to have better control over their actions. Further, Deci & Ryan (2000) suggest a strong correlation between the basic satisfaction measures of self determination with self-regulation.

Personality and other Psychosocial Factors

An individual's motivation to use SNS varies greatly due to many different factors. Studies have found that personal factors such as an individual's age and personality influences his pattern of SNS use (Madden, et al., 2013; Pfeil, Arjan, & Zaphiris, 2009) A study by Pfeil, Arjan, & Zaphiris (2009) compared the pattern of internet use amongst 2 groups of users, one made up of teenagers between ages 13 and 19 years old and the other, of senior citizens above 60 years. They found that the teenagers have larger network of friends compared to the elderly; have friends in their network who are closer to their age group, whereas the elderly's friendship network is made up of individuals of a variety of age group;. post more updates compared to elderly, made up of more negative emotions and self-references and make use of a variety of media (e.g. surveys, music, videos, games) compared to the senior citizens group.

Even amongst adolescents, age differences influences the pattern of SNS use. Older teens are found to be less likely to share their individual information compared to younger teenagers, edit their profiles more frequently, e.g. changing their profile pictures, backgrounds in MySpace, use different SNS that is, MySpace for younger teens vs. Facebook for older teens (Livingstone, 2008; Madden, Lenhart, Cortesi, Gasser, & Beaton, 2013). Livingstone (2008) explains this as a result of the teenager undergoing a transition in identity development, where while the younger teenager is still experimenting with identity creation, the older adolescent have formed an idea of their identity and is in the process of creating their community and forging companionships. Unfortunately, no study to date, (Mottram & Fleming, 2009) has measured the differences in intensity of use of SNS between younger and older groups of teenagers.

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Research has shown that personality is also a pertinent factor in influencing the way people behave on the internet (Amichai-Hamburger & Ben-Artzi, 2000; Amichai-Hamburger, 2002; Amichai-Hamburger, Wainapel, & Fox, 2002). In most personality studies, the Five-Factor Model (FFM) is commonly used to make sense of behaviour patterns. The FFM divides personality traits into five different dimensions, 1) Neuroticism, an individual's level of sensitivity towards stressful situations and the corresponding level of psychological distress ; 2) Extraversion, an individual's sociability and ability to interact and form social connections with others; 3) Openness to experience, an individual's willingness to seek and enjoy exposure to new experiences; 4) Agreeableness, an individual's level of tolerance and cooperation with the intention of maintaining or establishing harmony 5) Conscientiousness, an individual's diligence and organization skills (Costa & McCrae, 1990).

The Extraversion scale in the FFM is most commonly found to be strongly related to differences in patterns of Internet use. Based on this, two conflicting models of computer-mediated behaviour have emerged, the social compensation model and the rich-get-richer model. Based on the social compensation model, it has been found that introverts, individuals who score low on the extraversion scale of the FFM have benefited from computer-mediated communication because it helps them compensate for the challenges they experience with FacetoFace (FTF) communication (Amichai-Hamburger et al, 2002). They are suggested to benefit from the Internet more in terms of being able to make friends compared to their more extroverted counterparts. As a result, they are also more reliant on the use of applications like Instant Messaging (IM) and chat platforms rather than making phone calls or using applications like Skype. These introverts, or shy individuals, as they are commonly referred to, are also more likely to give more extensively detailed information of themselves in their Facebook profiles as compared to extroverts (Amichai-Hamburger & Vinitzky, 2010).

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Conversely, in the rich-get-richer model, it is suggested that extroverted individuals would extend their offline friendship-seeking behaviour on the Internet platform (Peter, Valkenburg & Shouten, 2005). As a result, it was found that individuals scoring high on the extraversion scale will use Facebook more frequently and have high levels of Facebook activity, for example, status updates and picture posts (Orr, Sisic, Ross, Simmering, Arseneault, & Orr, 2009). They were also found to have more friends on their Facebook profile (Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011). The two models were consolidated by Peter, Valkenburg and Shouten (2005), who found that both introverts and extroverts are likely to benefit from making more friends through online applications like SNS. Where introverts would have less inhibition to communicate and widen their social network; extroverts are able to utilise their friendship seeking skill-set together with the Internet's accessibility to connect with a wider group of people at the same time, in order to increase their social capital.

Meanwhile, Gosling et al. (2011) revealed that individuals found to have low levels of conscientiousness spend more time on Facebook than those with high conscientiousness. Gosling and colleagues explained that the instant gratification and feedback received in real time by SNS's like Facebook allow individuals with low conscientiousness to procrastinate on their other responsibilities. Mottram and Fleming (2009), the lack of perseverance in an individual predicts problematic internet use. However, to date, there are no studies exploring the link between the conscientiousness scale of the FFM to the Bandura's (1991) self-regulation model. While SNS like Facebook allows an outlet for individuals to procrastinate, an individual's ability to self-regulate, i.e. to delay gratification and perform a task that has a greater reward in the long run (for example, studying for an upcoming test instead of using Facebook) is closely related to the conscientiousness trait in the FFM. While there are studies conducted on personality factors, no studies to date have been conducted on personal strength

factors, hence causing a gap in the literature relating to SNS use. This study is conducted to initiate a move towards filling this gap.

Other factors typically associated with SNS use are loneliness and social anxiety (Caplan, 2007; McKenna, Greene, & Gleason, 2002; Morahan-Martin, 1999). Perceptions of online communication like its anonymity, perceived lower social risk because people do not have to literally 'face' rejection, and the time lapse which allows for greater preparation and control over self-presentation (Bargh, McKenna, & Fitzsimmons, 2002; McKenna, Greene, & Gleason, 2002). This helps individuals feel more secure, confident and effective when communicating online (Caplan, 2003).

McKenna, Greene, and Gleason (2002) found that people experiencing loneliness are also attracted to these features of the internet because they feel they can express their thoughts and feelings better with people online as compared to the people they know in real life. Loneliness is also found as an experience during adolescence that is associated with the onset of the need for intimacy (Blumenthal, Leen-Feldner, Babson, Gahr, Trainor, & Frala, 2011; Burhmester & Furman, 1987). How well adolescents are able to achieve this intimacy depends on how well they are accepted by their peers, where adolescents reporting few peers are more susceptible to feelings of loneliness and depression compared to those with a larger group of friends (Asendorpf, 2000; Jones & Carpenter, 1986). This suggests therefore, that adolescents facing high levels of loneliness would be attracted to Facebook as a tool to compensate for their unsatisfactory social life. Research has found that although frequent Facebook use has a positive effect on loneliness amongst students who *do not* report facing problems with loneliness; it does not have a positive impact on individuals with reported problems of loneliness (Lai, Zheng, Nickerson, & McMorris, 2012). Further, an individual's loneliness was not found to be associated to their frequency of Facebook use (Lai, Zheng, Nickerson, & McMorris, 2012; Ryan & Xenos, 2011).

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However, Caplan (2007) opines that over and above loneliness, social anxiety influences an individual's preference to communicate online, which in turn relates to problematic internet use. Findings by (Indian & Grieve, 2014), where highly socially anxious individuals were found to have increased well being from Facebook socialization whereas low socially anxious individual's Facebook use did not bring about any increase in well being over and above that which was brought about by their offline socialization. This suggests that social anxiety scores would positively correlate with the frequency of Facebook use. This research aims to explore this correlation further.

Overall, the current study aims to apply the TPB (Baker & White, 2010; Hamilton & White, 2008; Pelling & White, 2009), positing that frequent Facebook use in an adolescent is related to:

1. the adolescent's attitude towards the Facebook use and how the behaviour serves his needs,
2. the influence of his peers and community on the use of Facebook,
3. his perception of his ability to control his behaviour

However, the TPB does not account for psychosocial factors like shyness, loneliness and social anxiety, which, as literature has shown accounts for the frequency and pattern of Facebook use. Therefore this study has included these factors into its model, to create a more accurate depiction of the factors affecting frequency of Facebook use amongst adolescents. Figure 1 is a diagram of the factors as they relate to frequency of Facebook use. The influence of peer and community (as own in dotted lines) will not be analysed in the current study.

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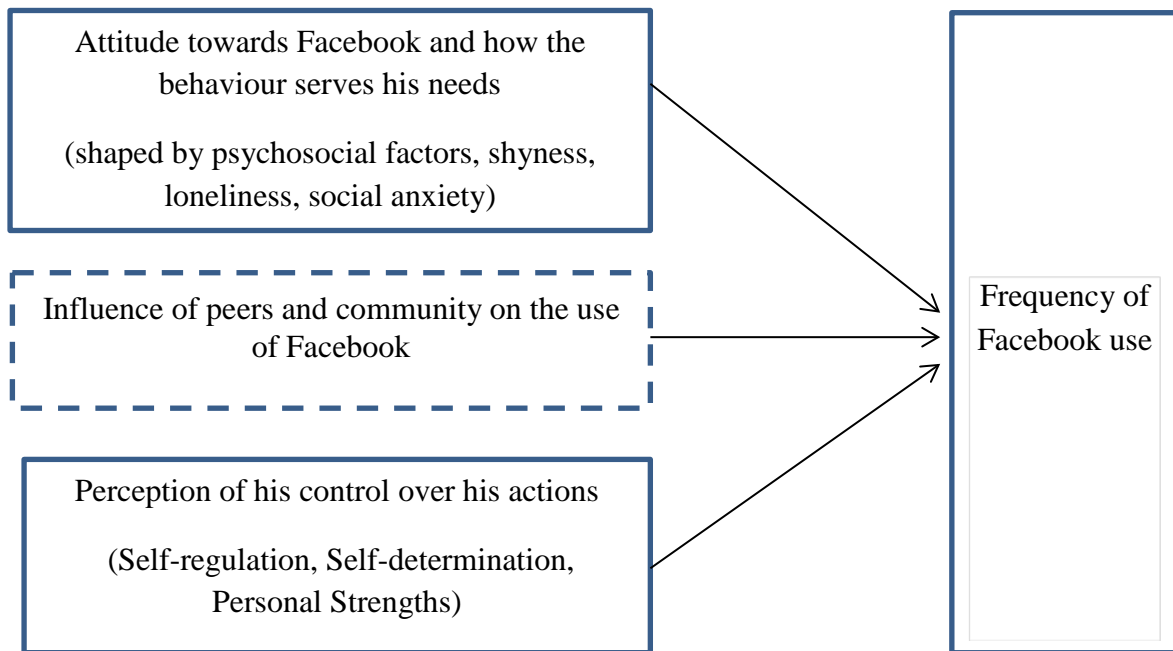


Figure 1: Model of the current study based on the theory of planned behaviour (TPB)

The study aims to determine if self-regulation is a protective factor against frequent Facebook use. At the same time, it will also look at other potential risk and protective factors as earlier discussed in this section. The following are the protective and risk factors which have been identified:

Protective factors.

1. Self-regulation
2. Personal strengths
3. Self-determination (Basic Needs Satisfaction)

Risk Factors

1. Sensation seeking
2. Impulsivity
3. Shyness
4. Loneliness
5. Social anxiety

Hypotheses

Hypotheses 1, 2 and 3 hope to answer research question 1, which asked what protective factors in terms of self-regulation, personal strengths and basic needs satisfaction are related to lower use of Facebook? Hypotheses 4 aims to respond to research question 2, which asked what are the risk factors in terms of impulsivity, sensation seeking, shyness, social anxiety and loneliness are related to Singapore youths' high use of Facebook?

Hypotheses 1a, 1b and 1c examine the relationship of protective factors of Self-regulation, Personal strengths and Basic Needs Satisfaction with Facebook use.

Hypothesis 1a

High self-regulation will be associated with less time using Facebook.

Hypothesis 1b

Personal strength variables (emotional awareness, social competence, emotional regulation, self-efficacy and empathy) will be negatively related to Facebook usage. Therefore, low emotional awareness, social competence, emotional regulation, self-efficacy and empathy will be associated with more time spent using Facebook. On the other hand, high scores on these personal strength variables will be associated with less time spent on Facebook.

Hypothesis 1c

Basic Need Satisfaction variables (Autonomy Satisfaction, Competence Satisfaction, and Relatedness Satisfaction) will be negatively related to Facebook usage. Therefore, students who report low scores in the measures of Autonomy Satisfaction, Competence

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Satisfaction, and Relatedness Satisfaction will spend more time using Facebook, and vice versa for students who report high scores on the Basic Needs Satisfaction variables.

Hypotheses 2a, 2b and 2c compare students with high and low Facebook use and those with high and low Self-regulation scores with regards to subscales in the Personal Strengths Inventory.

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on personal strength variables compared to those who report lower self-regulation scores. Thus those with lower frequency of Facebook usage and with higher self-regulation will report higher scores on the following variables of the Personal Strengths Scale, namely, Emotional Awareness, Emotional Regulation and Self-efficacy

Hypothesis 2a

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on Emotional awareness compared to those who report lower self-regulation scores.

Hypothesis 2b

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on emotional regulation compared to those who report lower self-regulation scores.

Hypothesis 2c

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on self-efficacy compared to those who report lower self-regulation scores.

The variables Empathy and Social competence, part of the Personal Strengths measures, were not included as these were not supported by the literature. Research on empathy and social competence did not show any relationship with use of SNS and Facebook (Amichai-Hamburger, 2002; Amichai-Hamburger & Vinitzky, 2010). Therefore, only the abovementioned three Personal strength variables are examined in this dissertation.

Hypotheses 3a to 3c examines frequency of Facebook use and self-regulation. Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on basic needs satisfaction variables compared to those who report lower self-regulation scores. Thus those with lower frequency of Facebook usage and with higher self-regulation will report higher scores on the following variables of the Basic Needs Satisfaction:

Hypothesis 3a

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on the Autonomy Satisfaction scale compared to those who report lower self-regulation scores.

Hypothesis 3b

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on the Competence Satisfaction scale compared to those who report lower self-regulation scores.

Hypothesis 3c

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on the Relatedness Satisfaction scale compared to those who report lower self-regulation scores.

Hypotheses 4a to 4e examines the relationships of impulsivity, sensation-seeking, loneliness, shyness and social anxiety with frequency of Facebook use.

Hypothesis 4a:

High levels of Impulsivity will be associated with more time on Facebook.

Hypothesis 4b:

High measures on Sensation seeking will be associated with more time on Facebook.

Hypothesis 4c:

High scores on the Loneliness scale will be associated with more time spent using Facebook.

Hypothesis 4d:

High scores on the Shyness scale will be associated with spending more time using Facebook.

Hypothesis 4e:

High scores on the Social Anxiety scale will be associated with spending more time using Facebook

Hypotheses 5 examines frequency of Facebook use and gender with Loneliness.

Hypothesis 5

Students with lower frequency of Facebook usage regardless of gender will have lower scores on Loneliness compared to those who report higher frequency of Facebook use.

Hypotheses 6 to 8 examines frequency of Facebook use and self-regulation with Loneliness, Shyess, Social Anxiety, Sensation seeking.

Hypothesis 6

Students with lower frequency of Facebook usage and who report higher self-regulation will have lower scores on Shyness compared to those who report lower self-regulation scores, regardless of whether they are males or females. Thus those with lower frequency of Facebook usage and with higher self-regulation will report higher scores on the Shyness scale.

Hypothesis 7

Students with lower frequency of Facebook usage and who report higher self-regulation will have lower scores on Social Anxiety compared to those who report lower self-regulation scores, regardless of whether they are males or females. Thus those with lower frequency of Facebook usage and with higher self-regulation will report higher scores on the Social Anxiety scale.

Hypothesis 8

Students with lower frequency of Facebook usage and who report higher self-regulation will have lower scores on Sensation Seeking compared to those who report lower self-regulation scores, regardless of whether they are males or females. Thus those with lower

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frequency of Facebook usage and with higher self-regulation will report higher scores on the Sensation Seeking scale.

CHAPTER 3

METHODOLOGY

This chapter presents the design of the study, the instruments utilised, the procedure and research methodology undertaken to meet the objectives of the study.

The ethical standards of the American Psychological Association (APA) in the Ethical Principles of Psychologist and code of Conduct (American Psychological Association, 2010) was followed and maintained throughout the administration of the procedures on the participants. The research is also approved by the university ethics review board, NTU Institutional Review Board (IRB).

Research Design

In this quantitative study, cross-sectional surveys were administered to the participants; students in primary and secondary schools under the Ministry of Education (MOE) in Singapore, to assess the distinctions between individual factors and social factors and how they relate the frequency at which the student engages in Facebook use.

Participants

This research uses data collected, in the "Singapore Youths in the Cyber world" Project. The research is funded by the Inter-ministry Cyberwellness Steering Committee (ICSC). The data was from 3727 students between Primary 3 to Secondary 5, from thirty MOE primary

and secondary school students in Singapore; the schools selected through a random stratified sampling conducted in July 2010. However, this current study was only interested in students who were using only Facebook; therefore, the final sample consisted of 886 participants.

Procedure

Parental consent was collected by giving out letters of consent through the participant's respective schools. The survey was administered online and conducted in the school's computer laboratory, in order to reduce interference with the classroom schedules of the school. It was divided into two sessions to prevent fatigue amongst the participants. Prior to the survey, a research assistant provided them with a brief explanation of the purpose of the study and gave them instructions on how to perform the survey. The students accessed the survey through Login IDs to ensure anonymity.

Instruments

The instruments used in the study displayed satisfactory levels of reliability when used on Singaporean primary and secondary school students in past research on Pathological Gaming. Therefore no pilot study was conducted. The online survey interface was developed by a computer expert and pre-testing was conducted by youth workers of Touch Community Services. Feedback given influenced changes made to the survey into its final copy.

Instruments of the survey utilized in this dissertation are;

1. Demographics Information
2. Social networking activities
3. Time Spent on Social Networking sites (Facebook) per week

4. Self-Regulation
5. Personal Strengths (Emotional Awareness, Emotional Regulation, Self-Efficacy, Empathy and Social Competence)
6. Basic Needs Satisfaction (Autonomy Satisfaction, Competence Satisfaction and Relatedness Satisfaction)
7. Impulsivity
8. Sensation Seeking
9. Loneliness
10. Shyness
11. Social Anxiety

The following explains each of the instruments used. Appendix A contains the items on the survey used.

Demographics Information

Information regarding the participant's gender, age, race, current educational level, socio-economic status as well as school grades were adapted from EU Kids Online Project (Livingstone & Haddon, 2009) and captured in this survey.

Time Spent on Social Networking sites (Facebook) per week

Students were given 24-hour time slots (for example, from 6am to 7am, 7am to 8am etc) to indicate in each of these time slots they had spent half an hour or a full hour on social networking sites.

Self-Regulation

This measure is adapted from Neo Eng Chuan's (2008) dissertation. It has a Cronbach's alpha of 0.92. The measure contains 10 items which measure a student's ability to organize their time spent on Internet activities. A 4-point Likert scale captures the participant's response, ranging from 1 (strongly disagree) to 4 (strongly agree). Higher scores represent a higher level of self-regulation.

Personal Strengths

This measure is adapted from the Personal Strengths Inventory scale (PSI) (Liau, Chow, Tan, & Senf, 2010). It measures five aspects of personal strength, namely, emotional awareness (contains 5 items and has a Cronbach's alpha of 0.87), emotional regulation (contains 3 items and has a Cronbach's alpha of 0.86), self-efficacy (contains 4 items and has a Cronbach's alpha of 0.85), empathy (contains 4 items and has a Cronbach's alpha of 0.86) and social acceptance (contains 4 items and has a Cronbach's alpha of 0.85). All five measures are reliable and have a total Cronbach's alpha of 0.85 in this research. The Cronbach's alpha values are based on Liau et al.'s (2010) study. The whole instrument consists of 20 items with positive and negative worded items. A 4-point Likert scale captures the participant's response, ranging from 1 (strongly disagree) to 4 (strongly agree). A mean score is calculated for all items of each scale in this measure, after taking into consideration the conversion of negative-worded items. Higher scores represent a higher level of personal strengths in each scale and altogether.

Basic Needs Satisfaction

Basic needs satisfaction scale was adapted from the Basic Psychological Needs Scale (Deci & Ryan, 2000). It measures three aspects of basic needs satisfaction, autonomy satisfaction (contains 7 items and has a Cronbach's alpha of 0.64), competence satisfaction (contains 7 items and has a Cronbach's alpha of 0.70) and relatedness satisfaction (contains 7 items and has a Cronbach's alpha of 0.79). All three measures are reliable and have a total Cronbach's alpha of 0.88 in this research. The whole instrument consists of 21 items with positive and negative worded items. A 4-point Likert scale captures the participant's response, ranging from 1 (strongly disagree) to 4 (strongly agree). A mean score is calculated for all items of each scale in this measure, after taking into consideration the conversion of negative-worded items. Higher scores represent a higher level of basic needs satisfaction in each scale and altogether.

Impulsivity

This measure is adapted from the Barratt Impulsiveness Scale (BIS) (Patton, Stanford, & Barratt, 1995), which measures an individual's ability to control compulsions (Patton, Stanford, & Barratt, 1995). It has a Cronbach's alpha of 0.80. The measure contains 10 items with positive and negative worded items. A 4-point Likert scale captures the participant's response, ranging from 1 (strongly disagree) to 4 (strongly agree). An individual's ability to control impulses is determined by his mean score in this measure, after taking into consideration the conversion of positive-worded items. Higher scores represent a higher level of impulsivity.

Sensation Seeking

This measure is adapted from The Brief Sensation Seeking Scale (BSSS) (Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002), which measures the an individual's The measure contains 8 items altogether; with 2 items measuring each of the 4 main features of the trait, experience seeking, thrill and adventure seeking, boredom susceptibility and disinhibition. It has a satisfactory total Cronbach's alpha of 0.84. A 4-point Likert scale captures the participant's response, ranging from 1 (strongly disagree) to 4 (strongly agree). Higher scores represent a higher levels of enjoyment in participating in thrilling and exciting activities.

Loneliness

This measure is adapted from Marcoen & Brumagne (1985) and measures relative levels of loneliness amongst children and adolescents. It has a Cronbach's alpha of 0.97. The measure contains 16 items which measure a student's ability to organize their time spent on Internet activities. A 4-point Likert scale captures the participant's response, ranging from 1 (strongly disagree) to 4 (strongly agree). Higher scores represent a higher level of loneliness.

Shyness

This measure is taken from the McCroskey Shyness Scale (McCroskey & Richmond, 1982). It measures actual communication behavior of reduced talking. The scale comprises 14 items which respondents rate on a 5-point Likert Scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The scale as a Cronbach alpha value of 0.72

Social anxiety

The original social anxiety scale (Birmaher et al., 1997) was used as a screening tool for children with social anxiety disorders across five dimensions: somatic/pain, general anxiety, separation anxiety, social phobia, and school phobia. In this study, social anxiety is measured with 20 items. Responses were made on a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree).. The Cronbach's alpha is 0.96.

CHAPTER 4

RESULTS

Chapter 4 presents the findings of this dissertation and discloses which of the hypotheses are supported by the results and which are not. Only significant differences and interactions between variables and factors will be represented with tables. The total number of participants included in the study is 886 and they consist of students from public primary and secondary schools in Singapore. 62.8% (n=556) of the participants were aged 13 years and above and 37.2% (n=330) were aged below 13 years old. The median participant's school level is Secondary 1. The majority of respondent were females (54.0%) and the racial distribution is as follows 72.3% Chinese, 18.3 Malay, 5.2 Indian and 0.2 were Eurasian or Others. Due to incomplete data, 10 were dropped from the final analysis.

Correlations among variables.

A Pearson's Correlation was performed to compare the strength and direction of relationships between the time spent on Facebook and the psychosocial, personal strength and basic needs satisfaction variables measured on each participant. Table 1 below presents the correlations between time spent on Facebook and the psychosocial variables, Self-regulation, Impulsivity, Sensation Seeking, Loneliness, Social Anxiety and Shyness. There were significant correlations between the time spent on Facebook and Self-regulation, Impulsivity, Sensation Seeking and Social Anxiety at $p < .01$; and correlation between time spent on Facebook and Shyness at $p < .05$. A strong, positive relationship was found between Loneliness and Social anxiety (0.63, $p < .01$). Also, a strong negative correlation was found between time spent on Facebook and Self-regulation.(0.88, $p > .01$) There was no correlation

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between the time spent on Facebook and Loneliness. Correlations between all psychosocial factors except Self-regulation were found to be significant at $p < .01$. Self-regulation was found to be negatively related to Impulsivity and positively related to Sensation seeking at $p < .01$.

	Time	Self- Regulation	Impulsivity	Sensation Seeking	Loneliness	Social Anxiety	Shyness
Time Spent on FB	1						
Self- Regulation	-0.88**	1					
Impulsivity	0.19**	-0.12**	1				
Sensation Seeking	0.16**	0.14**	0.32**	1			
Loneliness	0.02	-0.00	0.32**	0.06	1		
Social Anxiety	0.09**	0.07	0.31**	0.13**	0.63**	1	
Shyness	-0.08*	-0.02	-0.24**	-0.19**	0.10**	0.12**	1

*= $<.05$

** = $<.01$

Table 1. Correlations between time spent on Facebook (FB) and the psychosocial variables.

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Table 2 below presents the correlations between time spent on Facebook and the Personal Strength variables. There were no significant correlations between time spent on Facebook and the Personal Strength variables; Emotional awareness, Emotional regulation, Self-efficacy, Empathy and Social competence. There are strong and positive correlations between all factors of Personal Strength at $p < .01$.

	Time	PS: EA	PS: ER	PS: SE	PS: E	PS: SC
Time Spent on FB	1					
PS: Emotional Awareness (EA)	0.02	1				
PS: Emotional Regulation (ER)	-0.01	0.78**	1			
PS: Self Efficacy (SE)	-0.03	0.74**	0.76**	1		
PS: Empathy (E)	0.04	0.75**	0.70**	0.69**	1	
PS: Social Competence (SC)	0.02	0.73**	0.73**	0.74**	0.71**	1

*= $<.05$

** = $<.01$

Table 2. Correlations between time spent on Facebook (FB) and personal strength variables.

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Table 3 below presents the correlations between time spent on Facebook and the Basic Need Satisfaction variables. There were no significant correlations between time spent on Facebook and the Basic Needs Satisfaction variables; Autonomy satisfaction, Competence satisfaction and Relatedness satisfaction. There are positive and medium to strong correlations between all factors of Basic Needs Satisfaction at $p < .01$.

	Time	BNS: AS	BNS: CS	BNS: RS
Time Spent on FB	1			
BNS: Autonomy Satisfaction (BNS: AS)	-0.01	1		
BNS: Competence Satisfaction (BNS: CS)	-0.05	0.56**	1	
BNS: Relatedness Satisfaction (BNS: RS)	-0.02	0.58**	0.48**	1

*= $<.05$

** = $<.01$

Table 3. Correlations between time spent on Facebook (FB) and basic needs satisfaction variables.

Therefore, it is found that self-regulation is the factor with the strongest correlation with time spent on Facebook, where the higher the participants rated their self-regulation, the shorter the time they spend on Facebook. Other factors with weaker correlation to the time spent on Facebook are Impulsivity, Sensation seeking, Social anxiety and Shyness. Loneliness, Personal strength factors and Basic needs satisfaction factors are not related to time spent on Facebook.

Research Question 1

What protective factors in terms of self-regulation, personal strengths and basic needs satisfaction are related to lower use of Facebook?

Hypothesis 1a

High self-regulation will be associated with less time using Facebook.

The students' reported level of self-regulation, measured on the Self-Regulation scale, was negatively related to frequency of their Facebook usage ($r = -.88$, $p < 0.01$). See Table 1. Further, the correlation between high self-regulation and the time spent on Facebook was found to be large. Therefore, this hypothesis is confirmed. High self-regulation is strongly related to a Singaporean adolescent spending less time on Facebook. High self-regulation is therefore a protective factor related to lower Facebook use.

Hypothesis 1b

Personal strength variables (emotional awareness, social competence, emotional regulation, self-efficacy and empathy) will be negatively related to Facebook usage. Therefore, high emotional awareness, social competence, emotional regulation, self-efficacy and empathy will be associated with less time spent using Facebook, whereas a low score on these variables will be associated with more time spent on Facebook.

A student's evaluation of their personal strengths was measured by asking the students to rate their strengths in the following areas; emotional awareness, social competence, emotional regulation, self-efficacy and empathy. It was found that all measures of Personal Strength are not significantly related to the frequency of the students' Facebook use. The results of this analysis can be found in Table 2. Therefore, this hypothesis is not supported. A student's level of emotional awareness, social competence, emotional regulation, self-efficacy and empathy do not have an impact on the amount of time he spends on Facebook.

Hypothesis 1c

Basic Need Satisfaction variables (Autonomy Satisfaction, Competence Satisfaction, and Relatedness Satisfaction) will be negatively related to Facebook usage. Therefore, high score in the measures of Autonomy Satisfaction, Competence Satisfaction, and Relatedness Satisfaction will be associated with less time spent using Facebook, whereas a low score on these variables will be associated with more time spent on Facebook..

A student's basic needs satisfaction was measured by asking the students to rate their level of satisfaction in three factors, Autonomy, Competence and Relatedness. It was found that all measures of Basic Needs Satisfaction are not significantly related to the frequency of the students' Facebook use. The results of this analysis can be found in Table 3. Therefore, this hypothesis is not supported. A student's level of autonomy satisfaction, competence satisfaction and relatedness satisfaction do not have an impact on the amount of time he/she spends on Facebook.

Hypothesis 2

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on three personal strength variables, emotional awareness, emotional regulation and self-efficacy compared to those who report lower self-regulation scores.

Hypothesis 2a

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on Emotional awareness compared to those who report lower self-regulation scores.

Hypothesis 2b

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on emotional regulation compared to those who report lower self-regulation scores.

Hypothesis 2c

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on self-efficacy compared to those who report lower self-regulation scores.

A median split was conducted to divide the student group into high and low self-regulators. The median split was utilized to create dichotomous IVs so as to test the interaction between self-regulation and frequency of Facebook use. Two-way ANOVAs with Self-regulation (high and low) and Frequency of Facebook use (high and low) were conducted with the personal strength variables as dependent variables. All main effects were statistically significant at the .05 significance level. The means and standard deviations for each factor in the personal strengths scale are presented in Tables 4 to 6 below. Results of the two-way ANOVA (See Table (i) & (ii) in Appendix B) did not show any significant interactions between Self-regulation and frequency of Facebook use with variables, Emotional Regulation and Self-Efficacy in the Personal Strengths Scale.

Relationship between FB use and Self-Regulation 48

	High Self-regulation (N =435)		Low Self-regulation (N =441)		
Facebook Use	Mean (<i>M</i>)	Standard Deviation (<i>SD</i>)	Mean (<i>M</i>)	Standard Deviation (<i>SD</i>)	Mean
Low (N =453)	3.34	0.60	2.53	0.77	2.96
High (N =423)	3.27	0.68	2.66	0.77	2.94
	3.31	0.64	2.60	0.78	2.95

Table 4. Facebook group median split against emotional awareness.

	High Self-regulation (N =435)		Low Self-regulation (N =441)		
Facebook Use	Mean (<i>M</i>)	Standard Deviation (<i>SD</i>)	Mean (<i>M</i>)	Standard Deviation (<i>SD</i>)	Mean
Low (N =453)	3.11	0.65	2.35	0.74	2.76
High (N =423)	3.03	0.76	2.40	0.73	2.68
Total	3.08	0.70	2.37	0.73	2.72

Table 5. Facebook group median split against emotional regulation

Relationship between FB use and Self-Regulation 49

	High Self-regulation (N =435)		Low Self-regulation (N =441)		
Facebook Use	Mean (M)	Standard Deviation (SD)	Mean (M)	Standard Deviation (SD)	
Low (N =453)	3.07	0.62	2.30	0.70	2.70
High (N =423)	3.06	0.64	2.29	0.66	2.64
	3.06	0.63	2.29	0.68	2.68

Table 6. Facebook group median split against self-efficacy

While emotional regulation and self-efficacy variables did not yield any interactions when tested with self-regulation and frequency of Facebook use, there was a significant interaction for emotional awareness [$F(1,876) = 4.16, p=0.042$] (See Table (iii) in Appendix B).

Post hoc analysis revealed that the frequency of Facebook usage is related to Emotional Awareness in the Personal Strengths Scale depending on the degree of self-regulation shows significance for emotional awareness only, where:

- a) Low frequency Facebook users with high self-regulation have higher emotional awareness than low Facebook users with low self-regulation [$t(439,211) = -1.75, p=0.080$] (see Table (iv) in Appendix B).
- b) High Facebook users with high self-regulation have higher emotional awareness than low self-regulators [$t(433,193) = 1.09, p=0.000$] (see Table (iv) in Appendix B).

Relationship between FB use and Self-Regulation 50

Results of the interaction are illustrated in Figure 1 below. Therefore, it can be concluded that Hypothesis 2 is partially confirmed, where results are significant only for Hypothesis 2a. Hypothesis 2b and 2c are not supported.

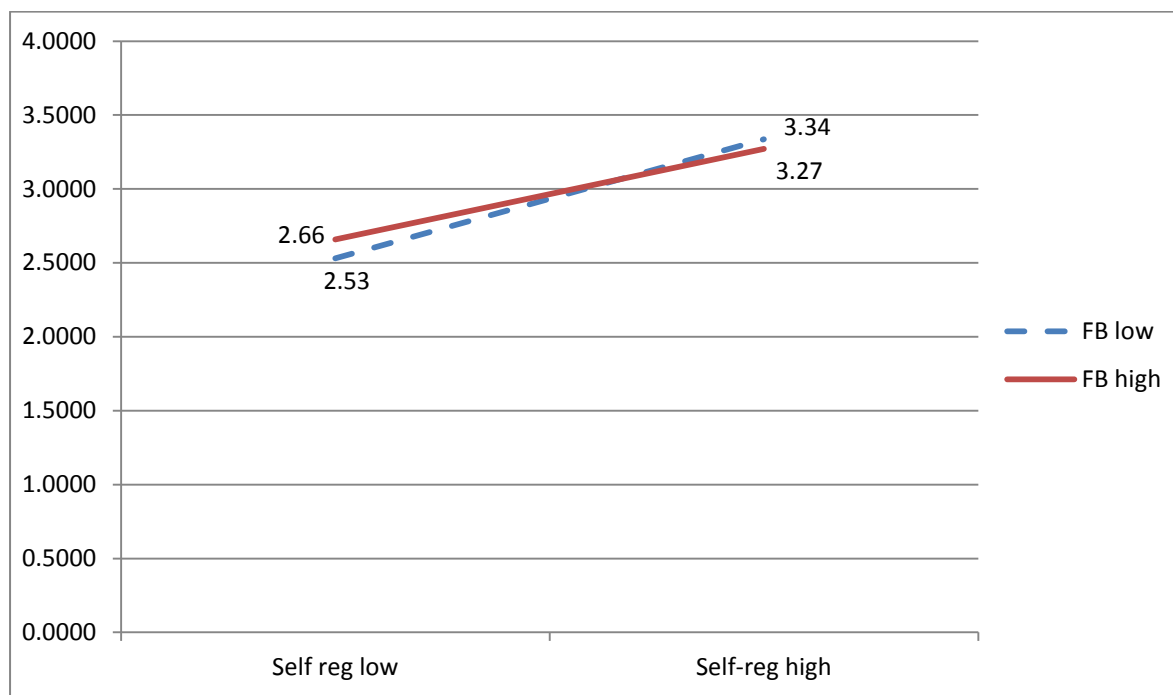


Figure 2. Interaction between Self-regulation (high-low) and Frequency of Facebook use for Emotional Awareness

Hypothesis 3

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on basic needs satisfaction variables compared to those who report lower self-regulation scores. Thus those with lower frequency of Facebook usage and with higher self-regulation will report higher scores on the variables of the Basic Needs Satisfaction

Hypothesis 3a

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on the Autonomy Satisfaction scale compared to those who report lower self-regulation scores.

Hypothesis 3b

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on the Competence Satisfaction scale compared to those who

Hypothesis 3c

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on the Relatedness Satisfaction scale compared to those who report lower self-regulation scores.

A median split was conducted to divide the student group into high and low self-regulators. Two-way ANOVAs with Self-regulation (high and low) and Frequency of Facebook use (high and low) were conducted with the basic needs satisfaction variables as dependent variables. Table 9 below shows the mean and standard deviations for the high and low self-regulators after the median split.

Relationship between FB use and Self-Regulation 52

	High Self-regulation (N =435)		Low Self-regulation (N =441)	
	Mean (<i>M</i>)	Standard Deviation (<i>SD</i>)	Mean (<i>M</i>)	Standard Deviation (<i>SD</i>)
Low (N =453)	2.96	0.48	2.64	0.48
High(N =423)	2.88	0.48	2.71	0.46

Table 7. Facebook group median split for relatedness

Results of the two-way ANOVA results did not show any significant interactions or main effects between Self-regulation and frequency of Facebook use with variables, Autonomy Satisfaction and Competence Satisfaction in the Basic Needs Satisfaction Scale. However, there was a significant interaction only for Relatedness Satisfaction [$F(1,876) = 5.21$, $p=0.02$] (see Table (v)-(vii) in Appendix B).

Post hoc analysis revealed that the frequency of Facebook usage is related to Relatedness Satisfaction in the Basic Need Satisfaction Scale depending on the degree of self-regulation shows significance for Relatedness Satisfaction only, where:

- a) High frequency Facebook users with low self-regulation have higher relatedness satisfaction compared to low frequency Facebook users with low self-regulation [$t(439,211) = -1.58$, $p=0.12$] (see Table (viii) in Appendix B).

Relationship between FB use and Self-Regulation 53

- b) Low Facebook users with high self-regulation have higher relatedness satisfaction than high Facebook users with high self-regulation? [$t(433,193) = 1.65, p=0.10$] (see Table (viii) in Appendix B).
- c) High frequency Facebook users with low self-regulation have lower relatedness satisfaction than high frequency Facebook users with high self-regulation [$t(439,211) = -1.58, p=0.12$] (see Table (viii) in Appendix B).
- d) Low frequency Facebook users with low self-regulation have lower relatedness satisfaction compared to low frequency Facebook users with high self-regulation [$t(433,193) = 1.65, p=0.10$] (see Table (viii) in Appendix B).

Results are illustrated in Figure 2 below. Therefore, it can be concluded that Hypothesis 3 is partially confirmed, where results are significant only for Hypothesis 3c. Hypothesis 3a, and 3c, are not supported.

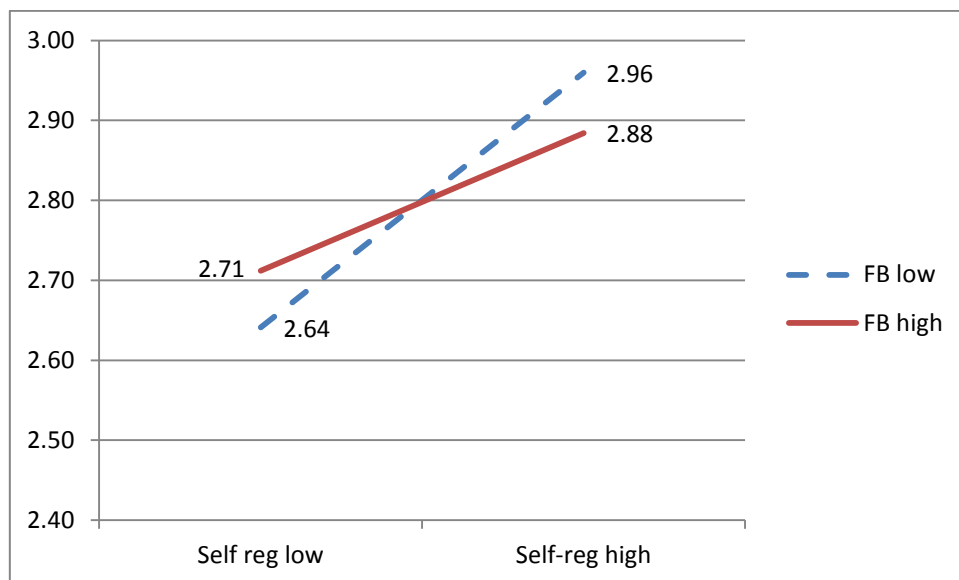


Figure 3. Interaction between Self-regulation (high-low) and Frequency of Facebook use for Relatedness Satisfaction.

Research Question 3

What are the risk factors in terms of impulsivity, sensation seeking, shyness, social anxiety and loneliness are related to Singaporean youths' high use of Facebook?

Hypothesis 4a

High levels of impulsivity will be associated with more time on Facebook.

The students' reported level of impulsivity measured on the Impulsivity Scale was positively related to frequency of their Facebook usage ($r=0.19$, $p<0.01$) See Table 1 Therefore, this hypothesis is confirmed.

Hypothesis 4b

High measures on Sensation seeking will be associated with more time on Facebook.

The students' reported level of sensation seeking, measured on the Sensation-seeking scale, was positively related to frequency of their Facebook usage ($r=0.16$, $p<0.01$). See Table 1. Therefore, this hypothesis is confirmed.

Hypothesis 4c

High scores on the Loneliness scale will be associated with more time spent using Facebook.

The students' reported level of loneliness, measured on the Loneliness scale, is not significantly related to frequency of their Facebook usage. See Table 1. Therefore, this hypothesis is not supported.

Hypothesis 4d

High scores on the Shyness scale will be associated with spending more time using Facebook.

The students' reported shyness, as measured on the Shyness scale, is negatively related to frequency of their Facebook usage ($r=-0.08$, $p<0.05$). The results of this analysis can be found in Table 1. Therefore, this hypothesis is not supported. Contrarily, the results show that students who report high scores on the Shyness scale also report spending less time on Facebook.

Hypothesis 4e

High scores on the Social Anxiety scale will be associated with spending more time using Facebook.

The students' reported level of social anxiety, measured on the Social Anxiety Scale, was positively related to frequency of their Facebook usage ($r=.09$, $p<0.01$). The results of this analysis can be found in Table 1. Therefore, this hypothesis is confirmed.

Hypothesis 5

Students with lower frequency of Facebook usage regardless of gender will have lower scores on Loneliness compared to those who report higher frequency of Facebook use.

The two-way ANOVA between gender and Frequency of Facebook use (high and low) with Loneliness is not significant. However, the two-way ANOVA with Gender (male, female) and Frequency of Facebook use (high and low) is significant. The results indicate that high frequency male Facebook users report lower loneliness (mean = 1.69, s.d. = 0.73) compared

Relationship between FB use and Self-Regulation 56

to low frequency male Facebook users (mean = 1.78, s.d. = 0.81). On the other hand, there are no significant differences between the level of loneliness amongst female, high and low frequency users of Facebook.

Further, results show that low frequency female Facebook users report significantly lower levels of loneliness (mean = 1.48, s.d. = 0.63) compared to low frequency male Facebook users (mean = 1.78, s.d. = 0.81). Conversely, amongst high frequency users of Facebook, both males and females are not different in their level of loneliness. Results are illustrated in Figure 3 below.

The results indicate that there are within and between gender differences in the scores for Loneliness scale and the frequency of Facebook use. High frequency male Facebook users show more loneliness compared to low frequency users. High and low frequency female Facebook users, on the other hand, show the similar levels of loneliness. Hypothesis 5 is therefore not supported.

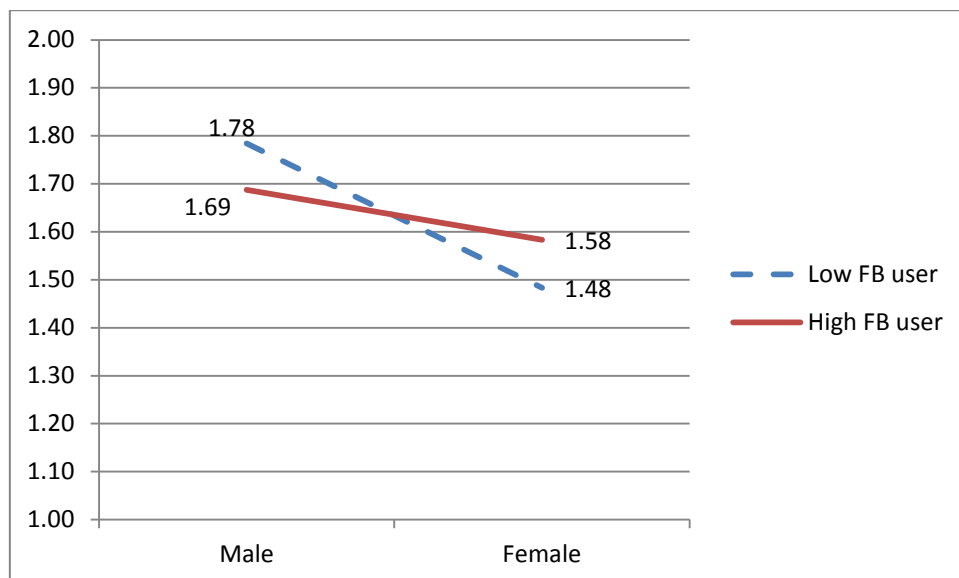


Figure 4. Interaction between Gender of Singaporean Adolescent (male-female) and Frequency of Facebook use for Loneliness.

Hypothesis 6

Students with lower frequency of Facebook usage and who report higher self-regulation will have lower scores on Shyness compared to those who report lower self-regulation scores, regardless of whether they are males or females. Thus those with lower frequency of Facebook usage and with higher self-regulation will report higher scores on the Shyness scale.

Two-way ANOVAs with Self-regulation (high and low) and Frequency of Facebook use (high and low) were conducted with Shyness as the dependent variable.

There were no significant main effects and interactions found. Hence the hypothesis cannot be confirmed.

Hypothesis 7

Students with lower frequency of Facebook usage and who report higher self-regulation will have lower scores on Social Anxiety compared to those who report lower self-regulation scores, regardless of whether they are males or females. Thus those with lower frequency of Facebook usage and with higher self-regulation will report higher scores on the Social Anxiety scale.

Two-way ANOVAs with Self-regulation (high and low) and Frequency of Facebook use (high and low) were conducted with Social Anxiety as the dependent variable.

There were no significant main effects and interactions found. Hence the hypothesis cannot be confirmed.

Hypothesis 8

Students with lower frequency of Facebook usage and who report higher self-regulation will have lower scores on Sensation Seeking compared to those who report lower self-regulation scores, regardless of whether they are males or females. Thus those with lower frequency of Facebook usage and with higher self-regulation will report higher scores on the Sensation Seeking scale.

Two-way ANOVAs with Self-regulation (high and low) and Frequency of Facebook use (high and low) were conducted with Social Anxiety s as the dependent variable.

There were no significant main effects and interactions found. Hence the hypothesis cannot be confirmed.

Summary of Findings

Based on the statistical analysis conducted, it was found that self-regulation is strongly and negatively correlated with the frequency of Facebook use. Therefore, self-regulation is a protective factor for FB usage. Further, contrary to what was earlier hypothesized, shyness was found to be significantly and inversely related to the frequency of Facebook use, where a high score in the Shyness scale was correlated with less time spent on Facebook. This suggests that Shyness may also act as a protective factor against frequent Facebook use. Social anxiety was significantly and positively related to Facebook use and so were Impulsivity and Sensation Seeking. Hence, these variables are risk factors contributing towards frequent Facebook use. Loneliness, Personal strengths and Basic Needs Satisfaction scores were found to have no correlation with the frequency of Facebook use.

Relationship between FB use and Self-Regulation 59

Furthermore, post hoc analysis revealed that the frequency of Facebook usage is related to Emotional Awareness; where low frequency Facebook users with high self-regulation, have higher emotional awareness than low Facebook users with low self-regulation. On the other hand, high Facebook users with high self-regulation, have higher emotional awareness than low self-regulators.

Frequency of Facebook usage is also related to Relatedness Satisfaction (of the Basic Need Satisfaction Scale). High frequency Facebook, low self-regulation users have higher relatedness satisfaction compared to low frequency Facebook users, low self-regulation users. Further, low frequency, high self-regulation Facebook users have higher relatedness satisfaction than high frequency, high self-regulation Facebook users. In addition, high frequency, low self-regulation Facebook users have lower relatedness satisfaction than high frequency, high self-regulation Facebook users. Conversely, low frequency, low self-regulation Facebook users have lower relatedness satisfaction compared to low frequency, high self-regulation Facebook users.

Lastly, the results indicate that there are within and between gender differences in the scores for Loneliness scale and the frequency of Facebook use. High frequency male Facebook users show more loneliness compared to low frequency users. High and low frequency female Facebook users, on the other hand, show the similar levels of loneliness.

CHAPTER 5

DISCUSSION

This chapter summarizes the findings of the study and discusses the implications of these findings on existing literature. It also presents the limitations of the current research and provides recommendations for future studies.

This dissertation set out to explore the factors which influence the frequency of Facebook use among teenagers, positing that the teenager's perception of his control over his actions (self-regulation) plays a role in determining the frequency of his Facebook use. At the same time, the study also looked at personal and psychosocial variables (personal strengths, basic needs satisfaction, loneliness, shyness and social anxiety) which determine the teenager's attitude towards Facebook use and how Facebook use fulfils his psychosocial needs, which then influence the frequency of his Facebook use.

Summary and Implications of Findings

Self-Regulation as a protective factor.

All three scales related to self-regulation, i.e. Self-Regulation scale, Impulsivity scale and Sensation Seeking scale showed significant correlations to the frequency of Facebook use amongst the participants. The participant's Self-Regulation score was strongly and inversely related to Facebook use, where high self-regulation is associated with less frequent Facebook use and low self-regulation is associated with more frequent Facebook use. This study established, therefore, that high self-regulation is a protective factor that prevents frequent usage of Facebook amongst Singapore adolescents. This corresponds well to the findings of studies overseas, where protective factors against frequent Facebook use were high self-regulation and self-efficacy (Caplan, 2003; LaRose, Lin, & Eastin, 2003). This finding also

grants a parallel between frequent usage of Facebook to the frequent use of other areas of technological use, for example internet addiction, where self-regulation has been repeatedly found to be a protective factor (Caplan, 2007; Hope, 2007; LaRose, Lin, & Eastin, 2003; Lam & Peng, 2010) and pathological gaming, where Neo (2008) found that teenagers with high social self-regulation are less likely to be involved in pathological gaming.

Participants' Sensation Seeking and Impulsivity scores were positively and moderately related to their Facebook use, where high scores in both factors are associated with more frequent Facebook use and vice versa. This corresponds to the findings of Lin and Tsai (2002), which suggested that high sensation-seeking teenagers are more dependent on internet use for socialization, e.g. SNS as compared to low sensation-seeking teenagers. The results suggest that the individual's levels of sensation seeking and impulsivity are both risk factors risk factors that may influence the high use of Facebook amongst adolescents in Singapore.

Psychosocial factors.

Contrary to studies by Baker & Oswald (2010), which indicate that Shyness (or introversion) was related to frequent Facebook use, it was found that Shyness was significantly and inversely related to the frequency of Facebook use, where a high score in the Shyness scale was correlated with less time spent on Facebook . This suggests that individuals who rate themselves higher on the Shyness scale seem to spend less time on Facebook. Based on the models described in literature, the results of this study supports the 'rich get richer' model of social networking (Peter, Valkenburg and Shouten, 2005), where it is purported that extroverted individuals with a larger social circle in real life would also spend more time engaged in activities on Facebook and have more online friends.

Further, the results also indicated that while loneliness did not have any correlation with the frequency of Facebook use amongst the participants, social anxiety ratings were found to have a significant and positive correlation with the frequency of Facebook use. This is in line with literature where there has been no reciprocal relationship found between loneliness and the frequency of Facebook use (Lai, Zheng, Nickerson, & McMorris, 2012; Ryan & Xenos, 2011). This also affirms Caplan's (2007) research, of the spurious relationship between loneliness and frequency of SNS use, where lonely individuals with social anxiety is the factor explaining the variation in the frequency of a participant's Facebook use.

This research uniquely found that high frequency male Facebook users report lower loneliness compared to low frequency male Facebook users whereas there were no significant differences between the levels of loneliness amongst female, high and low frequency users of Facebook. Furthermore, low frequency female Facebook users report significantly lower levels of loneliness compared to low frequency male Facebook users. Conversely, amongst high frequency users of Facebook, both males and females are not different in their level of loneliness. The results suggest that while frequent Facebook use satiates the socialization needs of the male participants, female participants seem less contented with online socialization through Facebook. This has not been explored in other studies and contributes to research literature.

Personal strength and basic needs satisfaction.

Based on previous research (Stefanone, Lackaff, & Rosen, 2011; Valkenburg, Peter, & Schouten, 2006), more controlled SNS use is associated with higher self-esteem and feelings of self-worth. Hence, participants in the research were tested for their perception of

their personal strengths and basic needs satisfaction (to test for level of self-determination).

Both measures were found to be unrelated to frequency of Facebook use.

However, post-hoc analysis found that participants who were high self-regulators and low frequency Facebook users rated higher on emotional awareness (a factor in the Personal Strengths measure) than participants who were low self-regulators with low frequency Facebook use. This suggested that self-regulation contributes to the individual's level of emotional awareness where individuals are not reaping any socialization benefits of Facebook use.

Participants with high frequency Facebook use with low self-regulation were also found to have higher relatedness satisfaction (a factor in the Basic Needs Satisfaction measure) compared to low frequency Facebook users with low self-regulation. Therefore, the use of Facebook contributes to relatedness satisfaction amongst individuals who are low self-regulators.

Impact of findings on the Theory of Planned Behaviour (TPB)

The TPB according to Ajzen and Madden (1986), consists of three variables; *attitude*, *subjective norm* and *perceived behavioural control (PBC)*, which influences an individual's decision to perform a task or an action. The result of this study confirms that PBC in terms of self-regulation has a strong influence on the frequency of a Singaporean adolescent's Facebook use. On the other hand, the adolescent's attitude towards Facebook is not affected by loneliness but by shyness and by social anxiety, where higher scores of shyness is related to less time on Facebook but higher social anxiety is related to greater Facebook use. Figure 5 below presents the model of TPB as confirmed by findings of this dissertation.

Attitude towards Facebook and how
the behaviour serves his needs:

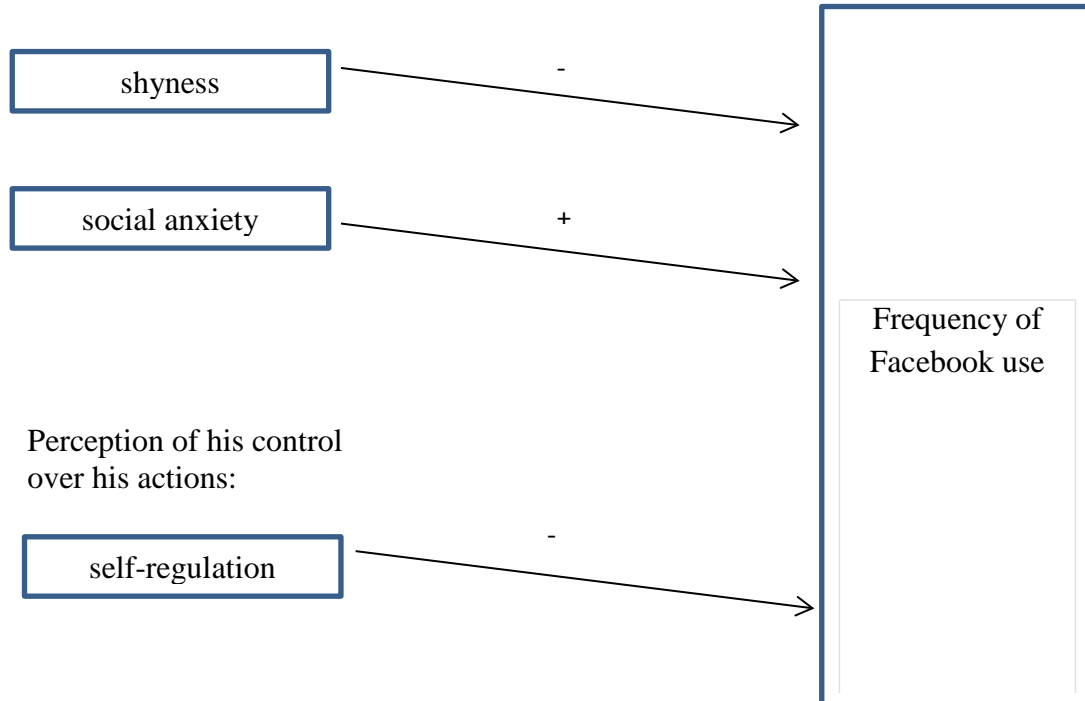


Figure 5: Model of the Theory of Planned Behaviour (TPB) according to findings of the dissertation

This study has also helped shed some light on new findings that has broadened the literature on self-regulation and frequency of Facebook use. Firstly, there have been no studies connecting self-regulation and Facebook use amongst adolescents in Singapore. This study has therefore provides a comparison for more research on the patterns of Facebook use amongst Singaporean adolescents as well as the protective and risk factors influencing its use. It signifies that the pattern of Facebook use in Singapore is similar to that those in the United States, where literature on self-regulation and Facebook use have been gathered thus far (Caplan, 2003; LaRose, Lin, & Eastin, 2003). Post hoc analysis also revealed relationships between frequency of Facebook use, self-regulation and emotional awareness, where low

frequency users with high self-regulation report being more emotionally aware compared to high frequency users with low self-regulation. These findings are unique amongst current literature on Facebook use.

This study has also introduced the influence of gender differences in the experience of loneliness and its impact on the frequency of Facebook use, where it has been found that frequent Facebook use satisfies the socialization needs of the male Facebook users, whereas female users seem less contented with online socialization through Facebook.

Lastly, the study also expands on the application of Facebook use to TPB used previously only by (Pelling & White, 2009). The application of TPB can be further expanded upon by adding the influence of the individual's peers and community on the frequency of his Facebook use, particularly the influence of family socioeconomic background, access to internet and parental supervision. The influence of family factors is something which will be further expanded upon in the following section on recommendations for future studies.

Limitations and Recommendations for Future Studies

Facebook is everchanging.

A main limitation of this study is the spurious nature of social networking – At any point in time, the pattern of Facebook use may have changed. Where in the past, communicating through messages one's Facebook wall is the most common Facebook activity, today, gaming and the sharing of pictures are the main activities engage my Facebook users. Further, the introduction of other forms of SNS like 'Snapchat', 'Twitter', 'Whatsapp' and 'Instagram' has affected Facebook's popularity. There have been articles indicating that Facebook is seeing a decline in teenage users (Shaughnessy, 2013; Olsen, 2013; Bosker, 2013) According to these articles, users and ex-users of Facebook cited

reasons like the lack of privacy, the increase in spam of recycled posts, the numerous invites for applications and games from others and the increase of Facebook use amongst their parents and older family members as reasons for why they would leave or have left the SNS. Therefore, research conducted today may not be validly compared with studies conducted in the past or in the future, especially when it involves the relationship between a trait and psychosocial factor with a pattern of Facebook use. It is therefore recommended that future studies should be conducted in a longitudinal design which takes into account changes in the patterns of Facebook usage to avoid errors in validity due to these rapid changes in the trends of SNS use. Further, studies should be opened to other popular SNS too, besides Facebook.

Regression

Regression analysis is lacking in the current research and is therefore a limitation to the dissertation. It is suggested that for future research, a regression analysis could be provided in order to estimate the effect of self-regulation on the dependent variables in the study.

Age and family factors.

Age is a personal factor that might be related to self-regulation as well as the frequency of Facebook use. Unfortunately, given the constraints of this dissertation, it was not a factor that was tested for in this dissertation. Research has found that the teenagers have larger network of friends and have friends in their network who are closer to their age group, whereas the elderlys' friendship network is made up of individuals of a variety of age group (Pfeil, Arjan, & Zaphiris, 2009). They also found that teenagers post more updates made up of more negative emotions and self-references compared to elderly, and make use of a greater variety of media (e.g. surveys, music, videos, games) compared to the senior citizens group. Even amongst adolescents, age differences influences the pattern of Facebook use. Older

teens are found to be less likely to share their individual information compared to younger teenagers, edit their profiles more frequently (e.g. changing their profile pictures and cover photos), use different SNS (MySpace for younger teens vs. Facebook for older teens) (Madden, et al., 2013; Livingstone, 2008.). Livingstone (2008) explains this as a result of the teenager undergoing a transition in identity development, where while the younger teenager is still experimenting with identity creation, the older adolescent have formed an idea of their identity and is in the process of creating their community and forging companionships. Unfortunately, no study to date, (Mottram & Fleming, 2009) has measured the differences in intensity of use of Facebook between younger and older groups of teenagers. Therefore, measuring the relationship between different age groups and patterns of Facebook use and psychosocial traits promises to be a productive direction for future research.

Furthermore, family and home factors also contribute towards the degree of internet supervision as well as the amount at which parents are involved in their adolescent's free time. Studies have shown that parent-child relationships as well as increased parents' involvement in a child's free time reduces a child's high risk behaviours and improves academic expectations and performance (Blum & Rinehart, 1997; Fan & Williams, 2010; Jeynes, 2007). In Singapore, where parents, especially those with children of primary school age often fill their child's schedules with extracurricular activities like tuition and music classes, children have their seemingly highly-motivated behaviours like studying determined by schedules and classes set by their parents. An interesting study in future would be to explore the degree of Singaporean parents' involvement their child's schedule and its effects on the child's self-regulation as a protective factor of Facebook (or other SNS) use.

Conclusion

Although the theory of planned behaviour and self-regulation has received substantial attention in a variety of domains of human behaviour; with wide contributions

especially in areas related to addictions, its relevance to the use of SNS, particularly Facebook, remains relatively unexplored. Further, patterns of Facebook use amongst the adolescent in Singapore are also an area of research that is substantially lacking. The rise of technological advancements and the miniaturization of communication devices have allowed for the widespread appeal of social networking amongst Singaporeans of all ages. Studies have found that frequent use of SNS like Facebook increases a teenager's risk of engaging in risk taking behaviours like offline meetings with online friends, bullying, identity theft and engaging in sexual behaviours (Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011; Hope, 2007; Livingstone, 2008).

This study focused on identifying the protective and risk factors influencing the frequent use of the popular SNS site, Facebook, which may help the teenagers, their parents, educators and youth workers to understand better the role of Facebook in the adolescent's lives and work towards promoting a balanced use of Facebook in their lives. This is done through the application of a modified Theory of Planned Behaviour to the use of Facebook amongst adolescents in Singapore, positing that frequent Facebook use in an adolescent is related to the adolescent's attitude towards the Facebook use and how the behaviour serves his needs, the influence of his peers and community on the use of Facebook, and his perception of the amount of control he has on the behaviour. The findings of the study supports theoretical model that the adolescent's perception of his ability to control his behaviour affects the frequency of his Facebook use. Self-regulation was found to be a protective factor in influencing less frequent use of Facebook amongst Singaporean adolescents.

Considering these risk and protective factors, youths at risk of compulsive Facebook use can be identified and support programmes can be designed towards harnessing and strengthening their self-regulating abilities and motivation towards being engaged in more

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productive activities. An example would be youth groups that hold regular activities like break dancing, rock climbing etc. that fulfils both the sensation seeking and socialization needs of these adolescents, but also allows them to exercise and socialize under the supervision of adults.

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Appendix A

Internet Activities Survey

1. Demographics Information

1. When is your birthday? _____(day/month./year)

2. What is your gender?
 - Male
 - Female

3. What are you doing at the moment?
 - Primary School Level ____
 - Secondary School Level ____

2. Social Networking Activities

4. How many Social networking sites do you have?
 - Facebook
 - YouTube
 - LinkedIn
 - Orkut
 - Twitter
 - Livejournal
 - Xing
 - MySpace
 - Bebo
 - Friendster
 - Others: _____

5. How many friends do you have on your Social Networking Sites?

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- Less than 10
- 10 - 50
- More than 50
- 51 - 100
- 101- 200
- 201 - 500
- More than 500

6. Are these people who you talked, chatted on Social Networking sites (e.g. Facebook, Twitter etc)

- School friends
- Friends who live near you
- Friends who live further away
- Family who live with you
- Family who live elsewhere
- People you haven't actually met
- Someone else
- Don't Know
- None of these
- Others_____

7. How many communities/groups are you a member of on Social Networking Sites?

- None
- Less than 5
- Between 5 and 10
- More than 10

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3. Time Spent on Social Networking site (Facebook)

8. How much time do you spend doing the following on a SCHOOL DAY

(Mon/Tues/Wed/Thurs/Fri)? Show the time you spend doing each activity by putting (x) for half an hour and (xx) for the full hour.

For example if you spend half an hour reading and 2 hours watching TV, this is how you show it:

	1- 2pm	2- 3pm	3- 4pm
Reading	x		
Watching TV		xx	xx

MORNING	6- 7am	7- 8am	8- 9am	9- 10am	10- 11am	11am 12pm	12- 1pm
School							
⊗ At school							
⊗ CCAs							
⊗ Doing homework on the Internet							
⊗ Doing homework NOT on internet							
⊗ Studying							
⊗ Other Hobbies/Sports							
Phone							
⊗ Talking to someone							
⊗ Using chat							
⊗ Using sms							
⊗ Playing games							
⊗ On the Internet							
Online activities							
⊗ Emailing							
⊗ Sending instant messages (using MSN, Gmail chat, Buddy, etc)							
⊗ Using social network sites (Facebook, Myspace, Twitter)							
⊗ Playing videogames							
⊗ Streaming music, videos							
⊗ Blogging							
⊗ Downloading files							
⊗ Surfing websites for info							
⊗ Surfing YouTube							

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<input type="checkbox"/> Gambling/Betting sites							
<input type="checkbox"/> Voice-enabled message service (e.g Skype)							
General Activities							
<input type="checkbox"/> Sleeping							
<input type="checkbox"/> Reading (for fun)							
<input type="checkbox"/> Watching TV							
<input type="checkbox"/> Watching movies/DVDs/Videos							
<input type="checkbox"/> Others _____							

AFTERNOON	1-2pm	2-3pm	3-4pm	4-5pm	5-6pm	6-7pm
School						
<input type="checkbox"/> At school						
<input type="checkbox"/> CCAs						
<input type="checkbox"/> Doing homework on the Internet						
<input type="checkbox"/> Doing homework NOT on internet						
<input type="checkbox"/> Studying						
<input type="checkbox"/> Other Hobbies/Sports						
Phone						
<input type="checkbox"/> Talking to someone						
<input type="checkbox"/> Using chat						
<input type="checkbox"/> Using sms						
<input type="checkbox"/> Playing games						
<input type="checkbox"/> On the Internet						
Online activities						
<input type="checkbox"/> Emailing						
<input type="checkbox"/> Sending instant messages (using MSN, Gmail chat, Buddy, etc)						
<input type="checkbox"/> Using social network sites (Facebook, Myspace, Twitter)						
<input type="checkbox"/> Playing videogames						
<input type="checkbox"/> Streaming music, videos						
<input type="checkbox"/> Blogging						
<input type="checkbox"/> Downloading files						
<input type="checkbox"/> Surfing websites for info						
<input type="checkbox"/> Surfing YouTube						
<input type="checkbox"/> Gambling/Betting sites						
<input type="checkbox"/> Voice-enabled message service (e.g Skype)						

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☉ Voice-enabled message service (e.g Skype)										
General Activities										
☉ Sleeping										
☉ Reading (for fun)										
☉ Watching TV										
☉ Watching movies/DVDs/Videos										
☉ Others _____ —										

9. How much time do you spend doing the following on a WEEKEND or on a HOLIDAY?

Show the time you spend doing each activity by putting (x) for half an hour and (xx) for the full hour.

For example if you spend half an hour reading and 2 hours watching TV, this is how you show it:

	1- 2pm	2- 3pm	3- 4pm
Reading	x		
Watching TV		xx	xx

MORNING	6- 7am	7- 8am	8- 9am	9- 10am	10- 11am	11am 12pm	12- 1pm
School							
☉ At school							
☉ CCAs							
☉ Doing homework on the Internet							
☉ Doing homework NOT on internet							
☉ Studying							
☉ Other Hobbies/Sports							
Phone							
☉ Talking to someone							
☉ Using chat							

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⊗ Using sms							
⊗ Playing games							
⊗ On the Internet							
Online activities							
⊗ Emailing							
⊗ Sending instant messages (using MSN, Gmail chat, Buddy, etc)							
⊗ Using social network sites (Facebook, Myspace, Twitter)							
⊗ Playing videogames							
⊗ Streaming music, videos							
⊗ Blogging							
⊗ Downloading files							
⊗ Surfing websites for info							
⊗ Surfing YouTube							
⊗ Gambling/Betting sites							
⊗ Voice-enabled message service (e.g Skype)							
General Activities							
⊗ Sleeping							
⊗ Reading (for fun)							
⊗ Watching TV							
⊗ Watching movies/DVDs/Videos							
⊗ Others _____							

AFTERNOON	1- 2pm	2- 3pm	3- 4pm	4- 5pm	5- 6pm	6- 7pm
School						
⊗ At school						
⊗ CCAs						
⊗ Doing homework on the Internet						
⊗ Doing homework NOT on internet						
⊗ Studying						
⊗ Other Hobbies/Sports						
Phone						
⊗ Talking to someone						
⊗ Using chat						
⊗ Using sms						
⊗ Playing games						

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⊗ On the Internet						
Online activities						
⊗ Emailing						
⊗ Sending instant messages (using MSN, Gmail chat, Buddy, etc)						
⊗ Using social network sites (Facebook, Myspace, Twitter)						
⊗ Playing videogames						
⊗ Streaming music, videos						
⊗ Blogging						
⊗ Downloading files						
⊗ Surfing websites for info						
⊗ Surfing YouTube						
⊗ Gambling/Betting sites						
⊗ Voice-enabled message service (e.g Skype)						
General Activities						
⊗ Sleeping						
⊗ Reading (for fun)						
⊗ Watching TV						
⊗ Watching movies/DVDs/Videos						
⊗ Others _____						

4. Self-Regulation

- | | | | | | |
|-----|---|---|---|---|---|
| 10. | I plan my day in such a way that I have enough time to finish my homework before going online/on the Internet | 1 | 2 | 3 | 4 |
| 11. | When I go online/on the Internet, I have an idea of when I'm going to stop playing | 1 | 2 | 3 | 4 |
| 12. | I can change the amount of time going online/on the Internet based on how much school work I have | 1 | 2 | 3 | 4 |
| 13. | If I have a test the next day, I will spend less time going online/on the Internet | 1 | 2 | 3 | 4 |
| 14. | I am aware of the time when I am going online/on the Internet | 1 | 2 | 3 | 4 |
| 15. | I know if I am spending too much time online/on the Internet | 1 | 2 | 3 | 4 |
| 16. | I think of strategies to prevent myself from spending too much time going online/on the Internet | 1 | 2 | 3 | 4 |
| 17. | I believe I can stop going online/on the Internet if I need to | 1 | 2 | 3 | 4 |
| 18. | I am good at managing time so that I can finish my work before going online/on the Internet | 1 | 2 | 3 | 4 |
| 19. | If I am spending too much time going online/on the Internet, I seek advice on how to reduce my time spent online/on the Internet. | 1 | 2 | 3 | 4 |

5. Personal Strengths (Emotional Awareness, Emotional Regulation, Self-Efficacy, Empathy and Social Competence)

20.	I know when I am getting angry	1	2	3	4
21.	I know how to deal with stress	1	2	3	4
22.	I set goals and plan how to reach those goals.	1	2	3	4
23.	I get along well with other people.	1	2	3	4
24.	I know what makes me sad.	1	2	3	4
25.	I calm myself down when I get angry.	1	2	3	4
26.	I know how to handle problems when they happen.	1	2	3	4
27.	I have high expectations and standards for success.	1	2	3	4
28.	I know when my mood is changing.	1	2	3	4
29.	I lose my temper easily.	1	2	3	4
30.	I keep on trying when solving problems.	1	2	3	4
31.	I find it easy to try again when I fail.	1	2	3	4
32.	I can tell what other people are feeling.	1	2	3	4
33.	I work well in a group.	1	2	3	4
34.	I know what makes me happy.	1	2	3	4
35.	I can control my anger.	1	2	3	4
36.	I am able to tell when other people are upset	1	2	3	4
37.	I'm able to tell what my feelings are.	1	2	3	4
38.	I get upset easily.	1	2	3	4
39.	I can understand another person's way of thinking.	1	2	3	4
40.	I know how to be accepted in a group	1	2	3	4
41.	I believe I will succeed in everything	1	2	3	4
42.	I find it easy to make friends	1	2	3	4

Relationship between FB use and Self-Regulation 95

43. I feel sorry for people when they are having problems. 1 2 3 4

6. Basic Needs Satisfaction

44. I feel like I am free to decide for myself how to live my life. 1 2 3 4
45. I really like the people I mix with. 1 2 3 4
46. Often, I do not feel very capable. 1 2 3 4
47. I feel very stressed in my life. 1 2 3 4
48. People I know tell me I am good at what I do. 1 2 3 4
49. I get along with people I come into contact with. 1 2 3 4
50. I like to be by myself and don't have a lot of friends. 1 2 3 4
51. I generally feel free to say what I think. 1 2 3 4
52. I consider the people I usually mix with to be my friends. 1 2 3 4
53. I have been able to learn interesting new skills recently. 1 2 3 4
54. In my daily life, I frequently have to do what I am told. 1 2 3 4
55. People in my life care about me. 1 2 3 4
56. Most days I feel I can achieve what I want to do. 1 2 3 4
57. People I mix with everyday tend to care about my feelings. 1 2 3 4
58. In my life I do not get much of a chance to show 1 2 3 4

Relationship between FB use and Self-Regulation 96

- how capable I am.
59. There are not many people that I am close to. 1 2 3 4
60. I feel like I can often be myself in my daily situations. 1 2 3 4
61. The people I mix with regularly do not seem to like me much. 1 2 3 4
62. I often do not feel very capable. 1 2 3 4
63. I do not have much chance to decide for myself how to do things in my daily life. 1 2 3 4
64. People are generally pretty friendly towards me. 1 2 3 4

7. Impulsivity

65. I let others finish what they are saying 1 2 3 4
66. I concentrate easily 1 2 3 4
67. I finish what I start 1 2 3 4
68. I often say things that I wish I had not when I am upset 1 2 3 4
69. I often make things worse because I act without thinking 1 2 3 4
70. I don't know why I do some of the things I do 1 2 3 4
71. I talk even when I know I shouldn't 1 2 3 4
72. I say whatever comes into my mind. 1 2 3 4
73. I interrupt when others are talking. 1 2 3 4
74. I like to gossip 1 2 3 4

8. Sensation Seeking

- | | | | | | |
|-----|--|---|---|---|---|
| 78. | I would like to explore strange places. | 1 | 2 | 3 | 4 |
| 79. | I enjoy going on trips that are not planned ahead. | 1 | 2 | 3 | 4 |
| 80. | I get restless when I spend too much time at home | 1 | 2 | 3 | 4 |
| 81. | I prefer friends who surprise me | 1 | 2 | 3 | 4 |
| 82. | I like to do frightening things. | 1 | 2 | 3 | 4 |
| 83. | I would like to ride on high roller coasters | 1 | 2 | 3 | 4 |
| 84. | I like exciting parties. | 1 | 2 | 3 | 4 |
| 85. | I would love to have new and exciting experiences, | 1 | 2 | 3 | 4 |
| | even if they are illegal. | 1 | 2 | 3 | 4 |

9. Loneliness

- | | | | | | |
|-----|--|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| | | 1 | 2 | 3 | 4 |
| | | 1 | 2 | 3 | 4 |
| | | 1 | 2 | 3 | 4 |
| 86. | I feel sad because I have no friends. | 1 | 2 | 3 | 4 |
| 87. | When I propose a game nobody likes to join in. | 1 | 2 | 3 | 4 |
| 88. | I feel left out by my classmates. | 1 | 2 | 3 | 4 |
| 89. | I think I am too often alone. | 1 | 2 | 3 | 4 |
| 90. | Other children are laughing at me. | 1 | 2 | 3 | 4 |
| 91. | I feel lonely. | 1 | 2 | 3 | 4 |
| 92. | Nobody listens to me when I say something . | 1 | 2 | 3 | 4 |
| 93. | I think in the class they are talking about me and | 1 | 2 | 3 | 4 |
| | leave me out . | | | | |
| 94. | I have not a single friend to whom I can tell | 1 | 2 | 3 | 4 |
| | everything. | | | | |

Relationship between FB use and Self-Regulation 98

95. I feel that nobody cares about me .	1	2	2	3	4	4
96. I feel lonesome	1	2	2	3	4	4
97. I don't know anybody with whom I can have a good chat .	1	2	2	3	4	4
98. I wish I had more friends .	1	2	2	3	4	4
99. I miss other children to play with	1	2	2	3	4	4
100. Others pretend not to see me.	1	2	2	3	4	4
101. I feel abandoned by my friends.	1	2	2	3	4	4

10. Social Anxiety

102. I get headaches when I am at school	1	2	3	4
103. I don't like to be with people I don't know well.	1	2	3	4
104. I worry about other people liking me.	1	2	3	4
105. I am nervous	1	2	3	4
106. I feel nervous with people I don't know well	1	2	3	4
107. I get stomachaches at school	1	2	3	4
108. I worry about being as good as other kids	1	2	3	4
109. I worry about going to school	1	2	3	4
110. I worry about things working out for me.	1	2	3	4
111. I am a worrier	1	2	3	4
112. It is hard for me to talk with people I don't know well	1	2	3	4
113. People tell me that I worry too much.	1	2	3	4
114. I feel shy with people I don't know well	1	2	3	4
115. I worry about what is going to happen in the future.	1	2	3	4

Relationship between FB use and Self-Regulation 99

116. I worry about how well I do things	1	2	3	$\frac{1}{4}$	2	3
117. I am scared to go to school	1	2	3	$\frac{1}{4}$	2	3
118. I worry about things that have already happened	1	2	3	$\frac{1}{4}$	2	3
119. I feel nervous when I am with other children or adults and I have to do something while they watch me (for example: read aloud, speak, play a game, play a sport.)	1	2	3	$\frac{1}{4}$	2	3
120. I feel nervous when I am going to parties, dances, or any place where there will be people that I don't know well	1	2	3	$\frac{1}{4}$	2	3
121. I am shy.	1	2	3	$\frac{1}{4}$	2	3

11. Shyness scale

122. I am a shy person.	1	2	3	4	5
123. Other people think I talk a lot	1	2	3	4	5
124. I am a very talkative person	1	2	3	4	5
125. Other people think I am shy.	1	2	3	4	5
126. I talk a lot.	1	2	3	4	5
127. I tend to be very quiet in class	1	2	3	4	5
128. I don't talk much.	1	2	3	4	5
129. I talk more than most people.	1	2	3	4	5
130. I am a quiet person.	1	2	3	4	5

Relationship between FB use and Self-Regulation 100

- | | | | | | |
|---|---|---|---|---|---|
| 131. I talk more in a small group (3-6) than others do. | 1 | 2 | 3 | 4 | 5 |
| 132. Most people talk more than I do. | 1 | 2 | 3 | 4 | 5 |
| 133. Other people think I am very quiet. | 1 | 2 | 3 | 4 | 5 |
| 134. I talk more in class than most people do | 1 | 2 | 3 | 4 | 5 |
| 135. Most people are more shy than I am. | 1 | 2 | 3 | 4 | 5 |

Appendix B

ANOVA tables

Hypothesis 2

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on three personal strength variables, emotional awareness, emotional regulation and self-efficacy compared to those who report lower self-regulation scores.

Hypothesis 2a

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on Emotional awareness compared to those who report lower self-regulation scores.

Hypothesis 2b

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on emotional regulation compared to those who report lower self-regulation scores.

Hypothesis 2c

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on self-efficacy compared to those who report lower self-regulation scores.

Relationship between FB use and Self-Regulation 102

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>
selfreggroup	106.55	1	106.55	218.151	.000
FB group	0.05	1	0.05	0.09	0.76
FBgroup * selfreggroup	0.84	1	0.84	1.63	0.20

Table (i). Detailed results of the two-way between subjects ANOVA with student's emotional regulation as the independent variable and time spent on Facebook and self-regulation as the dependent variables.

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>
selfreggroup	128.81	1	128.81	302.38	.000
FB group	0.02	1	0.02	0.04	0.83
FBgroup * selfreggroup	1.44	1	1.44	0.00	1.00

Table (ii). Detailed results of the two-way between subjects ANOVA with student's self-efficacy as the independent variable and time spent on Facebook and self-regulation as the dependent variables.

Relationship between FB use and Self-Regulation 103

Source	SS	df	MS	F	P
selfreggroup	109.377	1	109.377	218.151	.000
FB group	.213	1	.213	.424	.515
FBgroup * selfreggroup	2.088	1	2.088	4.164	.042

Table (iii). Detailed results of the two-way between subjects ANOVA with student's emotional awareness as the independent variable and time spent on Facebook and self-regulation as the dependent variables.

Source	F	Sig.	t	df	P
Low reg*Low FB use	0.19	0.67	-1.75	439	0.080
High reg*High FB use	1.74	0.19	1.09	433	0.277

Table (iv). Detailed results of the two-way between subjects T-test with student's emotional awareness as the independent variable and time spent on Facebook and self-regulation as the dependent variables.

Hypothesis 3

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on basic needs satisfaction variables compared to those who report lower self-regulation scores. Thus those with lower frequency of Facebook usage and with higher self-regulation will report higher scores on the variables of the Basic Needs Satisfaction

Hypothesis 3a

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on the Autonomy Satisfaction scale compared to those who report lower self-regulation scores.

Hypothesis 3b

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on the Competence Satisfaction scale compared to those who

Hypothesis 3c

Students with lower frequency of Facebook usage and who report higher self-regulation will have higher scores on the Relatedness Satisfaction scale compared to those who report lower self-regulation scores.

Relationship between FB use and Self-Regulation 105

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>
selfreggroup	94.00	1	94.00	198.51	0.00
FB group	0.49	1	0.49	1.04	0.31
FBgroup * selfreggroup	0.62	1	0.62	1.32	0.25

Table (v). Detailed results of the two-way between subjects ANOVA with student's autonomy satisfaction as the independent variable and time spent on Facebook and self-regulation as the dependent variables.

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>
selfreggroup	12.14	1	12.14	50.73	0.00
FB group	0.21	1	0.21	0.86	0.35
FBgroup * selfreggroup	0.25	1	0.25	1.04	0.31

Table (vi). Detailed results of the two-way between subjects ANOVA with student's competence satisfaction as the independent variable and time spent on Facebook and self-regulation as the dependent variables.

Relationship between FB use and Self-Regulation 106

Source	SS	df	MS	F	P
selfreggroup	.001	1	.001	0.01	0.94
FB group	13.09	1	13.10	58.36	.000
FBgroup * selfreggroup	1.17	1	1.17	5.21	.023

Table (vii). Detailed results of the two-way between subjects ANOVA with student's relatedness satisfaction as the independent variable and time spent on Facebook and self-regulation as the dependent variables.

Source	F	Sig.	t	df	P
Low reg*Low FB use	0.11	0.75	-1.58	439	0.12
High reg*High FB use	0.01	0.94	1.65	433	0.10

Table (viii). Detailed results of the two-way between subjects T-test with student's relatedness satisfaction as the independent variable and time spent on Facebook and self-regulation as the dependent variables.

Hypothesis 5

Students with lower frequency of Facebook usage regardless of gender will have lower scores on Loneliness compared to those who report lower self-regulation score. Thus those with lower frequency of Facebook usage will report higher scores on the Loneliness scale.

Source	SS	df	MS	F	P
gender	8.91	1	8.91	17.66	0.00
FB group	0.00	1	0.00	0.01	0.00
FBgroup * gender	2.11	1	2.11	4.19	0.04

Table (ix). Detailed results of the two-way between subjects ANOVA with student's gender as the independent variable and time spent on Facebook and Loneliness as the dependent variables.

Source	F	Sig.	t	df	P
Low reg*Low FB use	0.11	0.75	-1.58	439	0.12
High reg*High FB use	0.01	0.94	1.65	433	0.10

Table (x). Detailed results of the two-way between subjects T-test with student's gender as the independent variable and time spent on Facebook and Loneliness as the dependent variables.