Linking Loneliness and Use of Social Media

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Abstract

Currently, Internet based social media have an increased influence on society, and the use of social media has penetrated into every aspect of life. Because of online use of social media, individuals are connected through screen virtually, but isolated from each other physically. Previous conventional offline social life is decreasing and new psychological problem arises: loneliness. Empirical studies found that despite the fact that this generation has more devices and technologies that help people to stay connected, the feeling of loneliness in 21st century is the highest of all times so far.

This thesis will combine past empirical studies of relevant field with the theory of use and gratification, aiming to identify the relationship between use of social media and loneliness. This exploratory study was carried out in University of Helsinki through online survey, Facebook was chosen as an example of social media that is widely used among university students, and 112 valid survey samples were collected. Through quantitative research method, four major findings are found: (1) Loneliness is positively correlated with Facebook motivation, which can be interpreted as loneliness motivates people to use Facebook; (2) Loneliness is negatively correlated with the number of Facebook friends, which indicates that a larger social network size can combat loneliness; (3) Females use Facebook more intensively than males than people who prefer not to say their gender; (4) Asian/Pacific islander ethnicity group shows the highest motivation to use Facebook, followed by white ethnicity and then others.

Table of contents

1. Introduction

With the technology development and media transformation, media have entered people's everyday life and the involvement deepened with time. McLuhan proposed a metaphor that "medium is the extension of human's body and senses" (McLuhan, 1965). The appearance of social media enables people to participate in social interactions without taking part in real-life social activities. Social media is changing the lifestyle and daily routine of people, as well as reshaping the well being and spiritual fulfillment of individuals. Social media's function flourished with the increase of users. It is not only a tool for social interactions, but also a platform for public opinions, a channel for information dissemination.

In the information age, social media gain popularity rapidly, especially among the young adults (Pempek, Yermolayeva & Calvert, 2009). People use social media to create and sustain relationships with others (Ellison, 2007). The use of social media becomes an important part of students' everyday life, and the high engagement of social media blurs the online and offline life. However, international students are faced with the situation of being far away from home countries and trying to adapt into the host culture. Therefore, international students tend to use more of social media to integrate into the new environment and culture (Sawyer & Chen, 2012). In this circumstance, international students need to communicate with both new and old friends. Social media sites make it easier to keep up with whom they haven't seen for a while by observing the posts and activities, and in the same time reconnecting with new and old friends by making interactions through internet (Quan-Haase & Young, 2010). Facebook enables people to communicate with multiple social capitals at once (Sponcil & Citimu, 2013). Therefore, to communicate and adapt to the new environment as foreigners, Facebook is the primary social media where international students deepen friendship and establish contacts.

People use the social media platforms to communication with peers, publish their opinions, and organize events. According to emerging adulthood theory (Arnett, 2000), the late teens around 18-25 years old, are in the stage of emerging adulthood when they form self-identity and worldviews. And university students are mostly around the age of emerging adulthood; therefore, university is a place where students form their characteristics, values, worldview, and outlook on life. Social media satisfy the cognitive and affective needs of university students in multiple ways: web browsing, information acquisition, engagement in interpersonal communication and socialization (Utista et al., 2009).

According to statistic data1 that is released in January 2018, Facebook took the lead in social media industry as the first one to surpass 1 billion registered users, and 2.2 billion monthly active users.

1
https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/

Most popular social networks worldwide as of January 2018, ranked by number of active users (in millions)

Social Network	Active Users (millions)
Facebook	2 167
YouTube	1 500
WhatsApp	1 300
Facebook Messenger	1 300
WeChat	980
QQ	843
Instagram	800
Tumblr**	794
QZone	568
Sina Weibo	376
Twitter	330
Baidu Tieba*	300
Skype*	300
LinkedIn**	260
Viber*	260
Snapchat**	255
Reddit	250
LINE	203
Pinterest	200
yy	117
Telegram*	100
VKontakte	97
BBM*	63
Kakaotalk	49

Number of active users in millions

Sources
We Are Social; Kepios; SimilarWeb; TechCrunch; Apptopia; Fortune
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Additional Information:
Worldwide; We Are Social; SimilarWeb; TechCrunch; Apptopia; Fortune; Fortune; as of January 27, 2018; social n... app/voip included
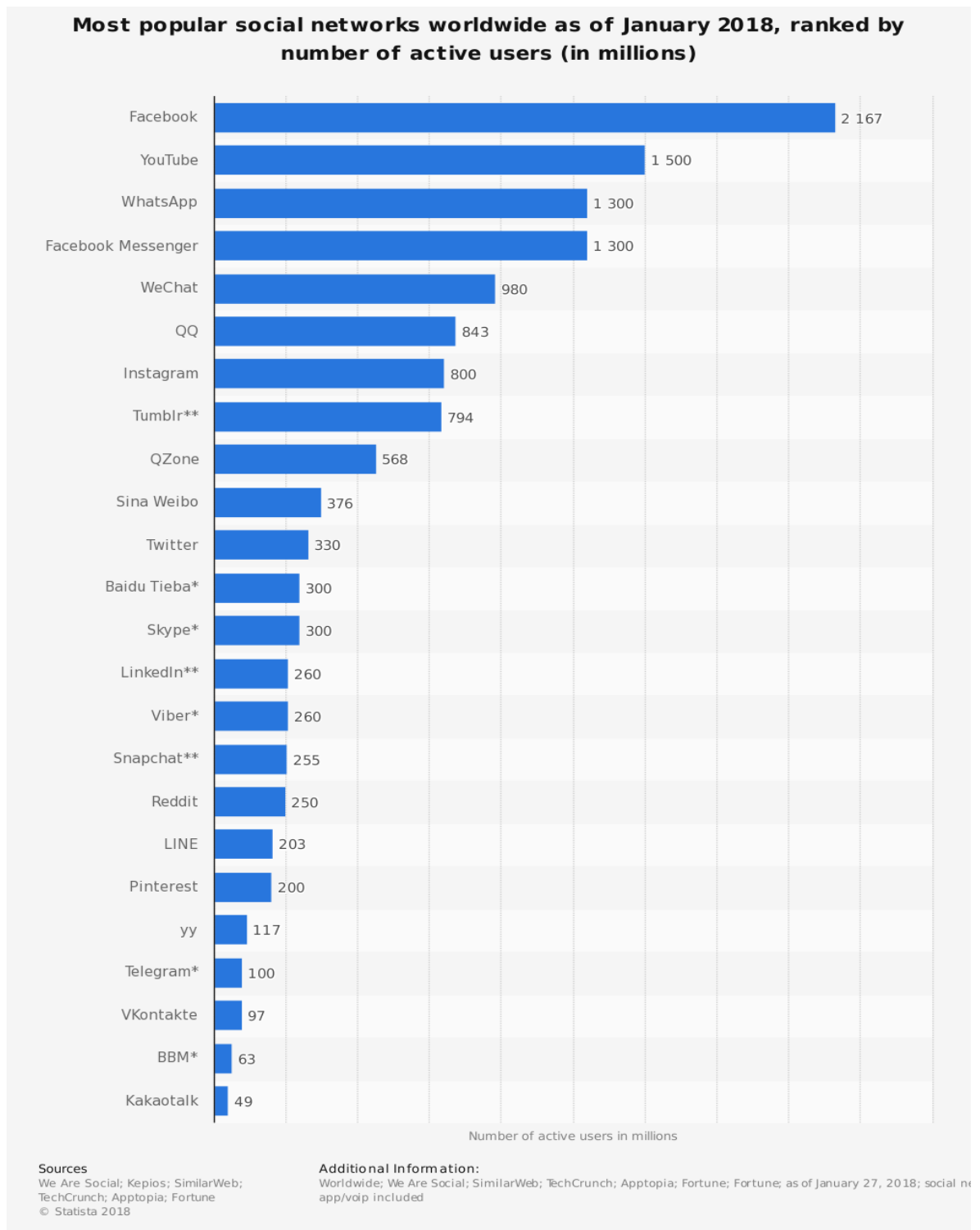
Figure 1: Rank of active users in leading social media, source: https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/

Facebook took the lead in user engagement not only in quantity of how many registered users, but also by quality. According to the data from Statistic Brain[1], the average time spending on Facebook per visit is 18 minutes, 48% of 18-34 year olds check Facebook when they wake up and 28% of this demographics check Facebook before they get out of bed. The Statistic Brain data also revealed that the average number of external social activities (groups, events, pages) that a user is linked to is 80. Villi, Matikainen, Khaldarova (2015) found out that audience are more active in Facebook while the news media are more active in Twitter. In the research (Villi, Matikainen, Khaldarova, 2015), the scholars concluded that Twitter was closer to the natures of mass media where the contents could flow to irrelative audience; Facebook formed a semi-closed interpersonal community where contents distributed within the strong ties and weak ties realm. Though there are other social media that students use in their daily life, but they differ a lot according to their nationalities. Each national has his or her own frequently used social media of their home countries, such as Wechat for Chinese nationals and Line for South Korean nationals. Foehr et al. (2005) carried out a survey research and found out that media have a ubiquitous influence in youth development, and using social media becomes the daily activity of most young adults (Ellison, Steinfield, & Lampe, 2007). In the environment of international students, globally widely adopted social media like Facebook serve as the common platform to connect individuals of all nationals. Facebook is a representative social network site that is used by many, online interactions in Facebook may influence on social relations and psychological development of international university students (Pempek, et al., 2007).

Ed Diener (2009) proposed the definition of subjective well being as the cognitive and affective evaluation of his or her life. The cognitive and affective evaluations are mainly composed of two parts, the satisfaction of life and the pleasant level of emotions. Subjective well being defines how people experience the quality of their lives. This study focuses on the social media usage and the consequent impact on psychological level of university students' perception of life.

Perlman and Peplau (1981, p.31) defined loneliness as "the unpleasant experience that occurs when a person's network of social relations is deficient in some important way, either quantitatively or qualitatively". Perlman and Peplau (1982, p.5) later added that loneliness could be regarded as a result from individual's perceived discrepancy between the desired level and the achieved level of social contacts.

Subjective well-being and loneliness are important indexes to evaluate the psychological status and life quality of international students. Media usage exerts an important backdrop for the social, emotional, and cognitive development of youth, considering the large proportion of time spent (Roberts, Foehr, & Rideout, 2005). Deducting the time for sleep, a person has almost fixed amount of time to conduct various daily activities if not sacrifice the time for sleep that is very important for health and well being. To get something done means to leave something else undone. The excessive time spent in social media will replace the time to cultivate active social, intellectual, or athletic engagement (Heponiemi, Elovainio, al., 2006). In addition, Eggermont and Van den Bulck (2006) discovered that proper amount of time for sleep is important for emotional development, and the excessive media exposure often occurs at night, which can replace the time for sleep. And this may lead to cognitive distortion that is associated with depression (Lakdavalla, Hankin & Mermelstein, 2007).

In social media, people can communicate and interact with friends, generating their own content. However, much of the time is spent in viewing information without direct interaction, and this is called online lurking (Pempek et al., 2009).

1.1 Research Questions

The research problem is whether the use of social media causes loneliness. To examine the research problem, a set of research questions are formed to serve as sub questions to explain the major research problem from different

perspectives with with details.

Q1: (Q1a) How do international students perceive loneliness? (Q1b) How do international students use social media?

This research question is composed of three-questions that are linked to factor analysis. The questions can be specified by:
1. What are the loneliness factors that are perceived by international students in University of Helsinki? (Q1a)
2. What are the Facebook activity factors that are mostly used by international students in University of Helsinki? (Q1b)
3. What are the motivation factors when international students in University of Helsinki use Facebook? (Q1b)

Through questionnaire, we can have an overview of international students' behaviours and motivations on social media and their perception of loneliness. Social media usage here is divided into two major parts: Facebook intensity which consists of all kinds of Facebook activities that are used by people today, and the intensity of how often people use each of the function. Facebook motivation that consists of all kinds of motivations that one uses Facebook, and the level of motivation for each purpose. Operational definitions for Facebook intensity, Facebook motivation, and loneliness will be introduced according to theories and empirical studies. Adequate observable items will quantitatively define each term. Factor analysis will be applied to explore the underlying phenomenon. After extracting factors, new variables will be formed and descriptive analysis will be added to present the general condition among the population.

Q2: Is there correlation between loneliness and the use of social media? If there is, it is positive or negative?

This question aims to solve the puzzle whether social media influence the

psychological loneliness of international students. In the introduction part, the potential influence of social media was discussed. Inevitably, the use of social media will directly or indirectly exert influence on people's experience of loneliness. The influence could be positive, negative. By using Spearman correlation analysis (Bolboaca & Jäntschi, 2006) of the survey data, this research question will be answered.

Q3: Do demographically different students use Facebook differently?

Analysis of variance will be applied in this question. I want to find out whether age, gender, ethnicity and other personal backgrounds change how students use Facebook.

1.2 Structure of the Study

The thesis will start by providing and analysing the present studies on social media area that have featured the influence social media exert on the behaviour and characteristics of the users. On the other hand, the present and previous researches on loneliness will also be introduced in the thesis.

To examine the subjective perception of loneliness, scientific and comprehensive tools will be introduced. Russell et al., (1980) have developed the commonly used tool called Revised UCLA Loneliness Scale for the measurement of loneliness, and it has achieved common agreement in the field of social psychology. The scale has 20 statements to examine the loneliness level of the respondents. The measure of social media will base on the previous quantitative studies on social media usage. In addition, being an international student in University of Helsinki myself, I will also add my own understanding, experience and observations of the international students in University of Helsinki. The measurements of social media usage pattern mainly consist of the intensity, effects, social circle, and social media disclosure. These measurements will be discussed detailedly in the methodology chapter.

Based on the theoretical backgrounds, a convincing measure of independent and dependent variables, the survey will be conducted among the international students in the University of Helsinki. After obtaining the responses, SPSS will be applied as the quantitative analysis software. Factor analysis, spearman correlation and analysis of variance (ANOVA) will be used to examine the three research questions respectively. The following chapters will further discuss the findings of the data analyses according to the theories, and try to draw conclusions and discussions.

2. Literature Review
2.1 Social Media

"Social media are computer-mediated technologies that allow the creating and sharing of information, ideas, career interests and other forms of expression via virtual communities and networks" . Christensson (2013) defined social media as collective Internet-based communities where users interact with each other online. This consists of various platforms that have different features, such as web forums, wikis, and user generated content sites. In social media, users can create their own profile, post contents, share videos, react to others' posts, and comments. In the 21st century, the rapid growth of the popularity of social media and users proved the dramatic development of social media technology and the decentralization. It is no longer high-tech that is owned by few elites like in the beginning of social media era, but a common tool for whoever has Internet access and communication devices. The popularization of social media means the change of lifestyle for all hierarchies of society.

Correa, Hinsley and Zuniga (2010, p.247-248) defined social media as digital mechanism which enables users to "connect, communicate and interact" with friends or strangers. And this mechanism could be practiced through instant message or through social networking sites. According to Correa et.al (2010, p.248), most of the researches on the use of social media have been sorely focused on social networking sites. Raacke and Bonds-Raacke (2008, p.169) clarified that social networking sites were virtual collections of audiences' profiles, which could be viewed and shared by other users, in order to forster interpersonal communication, or simply keep in touch. This virtual collection of profiles creates a list of friends for each SNS registered users, and the users included on this list have access to his or her virtual profile. This list indicates the user's virtual connections with others.

Survey showed that college students used social media to maintain friendships with offline acquaintances by online interactions, rather than to make new friends with strangers (Ellison et al., 2007; Sheldon, 2008). In the survey (Ellison et al., 2007), they also found out that using Facebook had a strong and positive influence on strengthening social capital.

Baker & Oswald (2010) discovered that online social media created a comfortable environment to interact with others without face-to-face interaction for shy people who frequently experienced less social communication and lack of social support due to the shyness. Using Facebook improves relationship quality because it is easier and more accessible to communicate online; it creates comfortable zone for people who are lack of social skills; users spend more time in interaction via social media so that they know each other better and feel more social support (Baker & Oswald, 2010). Social support received via online interaction helps to maintain existing relationships and also improves the quality of life for college students (Lui & Larose, 2008). The benefit of social media takes place not only by direct interactions such as sending out direct messages to someone, but also by indirect interactions such as broadcasting and receiving comments and likes.

2.2 Social Media Addiction

Hawi & Samaha (2017, p.2) perceived social media addiction as the compulsive use of social media that reflected behavioral addictive symptoms. Griffiths (2005) earlier pointed out these behavioral symptoms contain the following six aspects: "salience, tolerance, conflict, withdrawal, relapse and mood modification" (Griffiths, 2005). Andreassen, et al. (2012, p.502) reviewed recently published researches on social media addiction and indicated that social media were mostly used for maintaining offline networks that were previously established in real life. It corresponded to the findings of Kesici & Sahin (2009) that addicted Internet users use the social functions more than the non-addicted Internet users. Facebook use, or in other words, social media use, are linked to personality traits. People who have a higher degree of narcissism tend to use social media more actively than others, because social media provides a platform to present their ideal selves in a desired way (Buffardi & Campbell, 2008, p.1310). In another research, the different purpose of social media use was identified between extroverts and introverts. Kuss & Griffiths (2011) uncovered that extroverts use social media for enhancement, meaningly enhancing offline relationships; whereas introverts use social media for compensation, meaningly compensating the deficiency of offline social network by online social activities.

Many studies were carried out to examine the link between self-esteem and use of social media (Denti et al., 2012; Gonzales & Hancock, 2011; Steinfield, Ellison, & Lampe, 2008). And these studies found out that there was a significant correlation between self-esteem and the use of social media, more specifically, people who have low self-esteem tend to use more social media to improve their self-esteem, self-image and self-identity. Other empirical studies found out that technological addictions, including social media addiction, led to the negative psychological experience, such as stress, anxiety and depression; On the other hand, this addiction led to bad academic performance and satisfaction of life (Hawi & Samaha, 2016; Kuss, Griffiths, Karila, & Billieux, 2014; Lepp, Barkley, & Karpinski, 2014).

2.3 Loneliness

The studies of loneliness flourished in the 1970s. The publication of Weiss (1973) of Loneliness: The experience of emotional and social isolation was an important milestone in the history of loneliness studies (Peplau & Perlman, 1982), and this book provided guidances for the empirical researches in loneliness. Based on Weiss's perspectives, the UCLA Loneliness Scale (Russel et al., 1978) was fostered, and it has been widely recognized instrument to assess loneliness scientifically and systematically.

Weiss (1973 p.17) defined loneliness as a response to the absence of certain particular type of relationship, or relational provision. And loneliness is an unpleasant emotion due to self assessment of individual's own social network. Weiss (1973) argued that staying with human being from infancy throughout life there is a universal need for intimacy. Perlman and Peplau (1981, p.31) defined loneliness as "the unpleasant experience that occurs when a person's network of social relations is deficient in some important way, either quantitatively or qualitatively". Perlman and Peplau (1982 p.5) later added that loneliness could be regarded as a result from individual's perceived discrepancy between the desired level and the achieved level of social contacts. According to this definition raised by Peplau and Perlman, it is essential to recognise the significance of individual's social needs or desire. Because the feeling of loneliness is caused by the discrepancy between desired and achieved level of social contacts. Therefore, different people have very varied perception of being lonely, and one person can have different thresholds of being lonely throughout the whole life. " Personal and situational changes may also affect people's needs or desires for companionship and intimacy" (Peplau & Perlman, 1982). Peplau and Perlman (1982) pointed out three collective agreements in loneliness studies. Firstly, it is a result of deficiencies in an individual's social relationships. Secondly, it is a subjective experience rather than an objective social isolation, which means that being in a crowd or being alone does not determine whether a person feels lonely or not. Thirdly, the experience of

loneliness is unpleasant and distressing, rather than cheerful or peaceful.

Personal characteristics and situational factors can influence individual's vulnerability to loneliness (Peplau & Perlman, 1982). They identified a series of personal characteristics that were closely connected to loneliness, such as shyness, introvert, less willing to take risks in social activities, self-deprecation, low self-esteem, inadequate social skills stemming from childhood, etc.

2.4 Social Media and Loneliness: Empirical Studies

Olds and Schwartz (2009) claimed that, despite the fact that this generation has more devices and technologies that help people to stay connected, the feeling of loneliness in 21st century America is the highest of all times so far. Do virtual connectivities contribute to combating loneliness? Empirical studies have produced mixed findings of the link between social media and loneliness. Some studies found out that online communication through social media potentially enhanced the social support and self-esteem that users may perceive, and reduced loneliness and depression (Shaw & Gant, 2002). However, some other studies argued that online communication potentially isolated individual users in real life and gave rise to low well being (Kim, Larose, & Peng, 2009).

Pittman and Reich (2016, p.162-163) carried out a quantitative research among over two hundred undergraduate students of journalism major and business major in a university in the United States. They discovered that people who used Facebook were significantly less happy than the people who didn't use Facebook. Pittman and Reich (2016, p.163) speculated that Facebook use would give rise to loneliness and decrease the satisfaction with life and feeling of happiness. In opposition, Ryan and Xenos (2011, p.1663) conducted a survey among over one thousand university students in Australia, and they concluded that people who use Facebook have higher degree of family loneliness than non-users. And they found out that lonely people spend more time on Facebook than people who don't feel lonely, and the purpose for the lonely people to use Facebook is not to strengthen their social capital, but to browsing online

contents from other users.

Is loneliness the cause of heavy social media usage, or is loneliness the result of heavy social media usage? Morahan-Martin and Schumacher (2001, p.25) stated online communication was easier and less embarrassing than face-to-face communication for lonely and depressed people, social media helped to combat their desire for social interaction, in results it led to higher preference of using social media for communication. Social media and online communication appealed to their need of socializing and avoided their personality shortcomings, in results some of them devoted excessive time on the Internet, which potentially led to behavioral symptom called "compulsive use" (Caplan, 2005, p.725). As a result, the compulsive use of social media would replace with time of offline social engagement. Lonely people are dissatisfied with their offline relations due to deficient social skills; they turn to use more of online communication for compensation (Kim, LaRose, & Peng, 2009, p.452). Kim et al.(2009, p.452-454) conducted a survey among over six hundred university students in the United States, they found the malicious cycle of loneliness and Internet use. Lonely people who find maintaining offline interactions difficult, tend to use Internet (including social media) excessively, which lead to additional problems such as bad academic performance, missing class or work, and depression, etc. These additional problems motivate their desire to escape from real life problems to the Internet, which isolate them more and lead to increased loneliness. However, this research tested not only the social media, but Internet use as a whole. According to the same research, the top three most frequently used Internet functions are: downloading, entertainment applications, and social media. Downloading significantly led to loneliness, entertainment applications led to low wellbeing, and regulated use of social media were harmless. In other words, among all the Internet uses, it is not social media that significantly causes loneliness.

In a comparison study, Burke, Marlow and Lento (2010) uncovered the contrary effects of using social media by differentiating active use and passive use.

Actively using social media refers to that users use social media in active ways, such as posting status updates and sending messages to other users, which can be regarded as generating contents. Passively using social media refers to that users use social media in passive activities, such as browsing information and viewing others' posts, which can be regarded as intaking contents. Burke et al. (2010, p.1912) concluded that active use of social media decrease loneliness and increase social capital, whereas passive use of social media increase loneliness and decrease social capital.

The aforementioned studies were all based on survey results, which relied on participants' subjective self-report. Deters and Mehl (2013) did an experiment among university students to find out whether posting Facebook status updates caused loneliness or relieved loneliness. By comparing the experimental group and controlled group, a significant difference was identified: posting more status updates on Facebook would reduce loneliness, and such effect lied in the fact that frequent posts makes users feel stronger daily social connection with their friends.

Social comparison orientation is the mental activity to compare someone's own achievements, experiences and situations with those of others (Buunk & Gibbons, 2006, p.16). This kind of social comparison uses other people's status as objective criteria for self-assessment (Festinger, 1954). Wood (1989) defined social comparison into two categories: upwards and downwards. Upwards social comparison is to compare oneself with someone who is better than him or her, in order to improve oneself; downwards social comparison is to compare oneself with someone with who is worse than him or her, in order to feel better of oneself. Social media provide rich contents for interior social comparison activities, users mostly post positive self-image (Yang & Brown, 2016), it would make the users engage more in the upwards social comparison, which potentially leads to envy and low self esteem (Lim & Yang, 2015).

The use of social media is beneficial for social interactions, but it might also

cause social comparison (Yang, 2016, p.2). Yang (2016, p.4) found out that social comparison orientation is the moderator between use of social media (i.e. Instagram) and loneliness. For people of higher tendency of social comparison, Instagram use does not help to reduce loneliness, whereas for people of lower tendency of social comparison, Instagram use helps to reduce loneliness.

2.5 Use and Gratification Theory

Use and gratification theory was firstly used to examine the patterns and motivations of audiences of the traditional media such as newspaper, broadcasting and television (Katz & Blumer & Gurevitch, 1974). Therefore, the patterns can be explained as how people use media, and the motivations can be explained as why people use media. According to use and gratification theory, audiences/users differ in the gratifications they expect from the mass media. With the rapid growing speed of social media and their interactive feature, there is an emerging trend that researchers apply the use and gratification theory to the use of social media (Flanagin, 2005). This theory accesses media in a psychological perspective that is greatly different from the traditional approach, which regards individuals as passive recipients (Urista & Dong & Day, 2009). However, use and gratification theory emphasizes on what people do in media, how people use media, and why people use media, rather than the consequent influence that media have on individuals (Katz, et al., 1974).

Wilbur Schramm (1949) introduced the concepts of immediate rewards and delayed rewards in the theory of news reading. According to Schramm (1949), the basic assumption is that news reading must be rewarding in either way. This corresponds with Freud's (1958) concepts of the pleasure principle and reality principle (Pietilä, 1968). Some news items provide immediate reward (pleasure principle), which means the reading offers immediate pleasure for the audience. This can be a decrease of tension or discomfort, or an increase of joy or satisfaction. On the other hand, some news items provide delayed reward (reality principle), which means the reward will be gained sometime later. This can be learning the realistic incidents to help prevent future danger and harm.

Schramm's news reading theory is earlier interpretation of use and gratification theory.

The use and gratification approach determines media by a set of different evaluations: "people's needs and motives of communication, the psychological and social environment, the mass media, the functional alternatives to media use, communication behavior, and the consequences of such behavior" (Rubin, 1994, p.419). Kayahara and Wellman (2007) have generalized two categories of media gratification: process and content. Process refers to the gratifications that people gained during the conduct of the activities, such as browsing or generating contents. By contrast, content refers to the gratification that individuals obtain from the acquisition of information. Starkman (2007, p.211) generalized the motivations for using the Internet mainly as "relaxation, fun, encouragement and status". Cho (2007, p.341) had a similar view, that he demonstrated the motivations as "interpersonal relations, information, and entertainment". Sheldon (2008) discovered the gender differences when it comes to the motives for the use of Facebook. She concluded that women used Facebook mainly to maintain offline relations, pass-time, and entertainment. By contrast, men tended to use to Facebook to develop new relations and meet new people. Donath and Boyd (2004) proposed that social media enabled the reinforcement of weak ties within a community, because Internet as a tool helped to maintain weak ties cheaply and easily.

Empirical studies revealed the gratifications of using social media, which is a combination of process and content (Song, Larose & Eastin, 2004, p.386). The forms of social media are various and each kind of media facilitates unique communication needs, which provides biased rewards and social consequences for its users (McLuhan & Powers, 1989). Quan-Haase & Young (2010) applied the use and gratification theory in social media by a comparison study of Facebook and instant messaging. They discovered that online lurking contributed to gratification, because the social information obtained from Facebook helped users to feel they were part of a peer network. In the same

time, receiving comments and timeline posts from others through social media contributes to better self-image that people have on themselves (Urista et al., 2009). This is because timely and sufficient responses and reactions from others make individuals feel they attract attention, which improves the gratification of personal and interpersonal desires (Urista et al, 2009).

Scholars have criticized the use and gratification for the narrow focus on individual users (Elliot, 1974). This criticism schools held that use and gratification theory failed to interpret why people used a certain kind of medium and how a certain gratification was achieved by using this medium. Moreover, many central concepts of use and gratification theory remained unclear (Swanson, 1977). In response to the critiques, Wenner & Rayburn (1980) developed the theory with two distinct kinds of gratification within the use and gratification theory: gratification obtained and gratification sought. Gratifications obtained refer to the gratifications that audiences or users actually experience during the use of a certain kind of medium. On the other hand, gratifications sought refer to the gratifications that audiences or users expect to obtain from the medium in prior to the actual use, which is also considered as the motivations for using a certain medium. The gratifications obtained and gratifications sought are likely to be different. When the gratifications obtained equals or surpasses the gratifications sought during the use of a certain medium, the persistent use of the medium is very likely to happen (Palmgreen & Payburn, 1979). Researchers have discovered that gratifications obtained are strong predictors that explain the media exposure than the gratifications sought (Sheldon, 2008). Most researches in use and gratification theory only were focused merely on the obtained gratifications, which ignored the analysis of expected gratifications that individuals sought for initially.

Overall, use and gratification theory has provided an advanced theoretical approach in the initial stage of all communication media, from traditional media to new media (Ruggiero, 2000). Lin (1996, p.574) concluded that the major strength of the use and gratification theory was the ability and potential to allow

researchers to investigate "mediated communication situations via a single or multiple sets of psychological needs, psychological motives, communication channels, communication content, and psychological gratifications within a particular or cross-cultural context".

2.6 Description of Facebook

Facebook is a leading online social media and social networking site founded by Mark Zuckerberg in 2004. In the initial stage, Facebook was only limited to Harvard students. Gradually with the influence and quick popularity, Facebook developed to other higher education institutions and various American universities. At first, Facebook membership has various requirements such as age, and later on, it gradually abandoned the limitations and was open to everybody who has a valid email address, and it is now all over the world except blocking countries.

Users can access Facebook from a variety of devices with Internet connection, including desktop, laptop, tablet, and mobile phones. Users can create their own profile that includes personal information such as name, date of birth, occupation, education, professional skills, hometown, city of residence, status of relationship, family members, favourite motto, interests, and so on (Facebook for IOS, version 68.0). Members can add friends, post status, send messages, upload photos and videos, share links, post in other friends' timeline, comment or react to other's posts, join groups, create and promote event, create pages, and so on.

Facebook allows users to control the list of friends of their own account, they can send friend request; and when they receive a friend request from others, they can accept or ignore. The users also can control who, can view how much information, by editing the privacy settings. Users can tag themselves or be tagged by others in a picture or a post, and they can choose to accept the tag or remove the tag. When accepting the tag, the post or photo will be shown also to the tagged person's timeline.

3. Methodology

Initially, literature analyses were applied to collect, sort and review the primary and secondary documents. Based on the existing documents and relevant indicators, I quantified the core concepts and research questions of this study; therefore, outlined the design of questionnaire elements.

The following are the steps and purposes of literature analysis used in this study. Firstly, determining the scope of the literature. By narrowing the scope of the study, several keywords such as social media, loneliness, use and gratification were used to search for manageable sizes of literatures that were to be analysed. Secondly, collecting relevant documents. After determing the scope of literatures, quickly review the abstracts of each article, and collect relevant literatures and put them into categories by topic. Thirdly, analysing useful information. According to the topical categories, read and identify relevant information and establish the frames of survey. Forthly, excavating the content of the literature. Dig into the contents during the process of reviewing the literatures, compare it with the research topic nd revise the perspectives of the research.

In this chapter, I will explain the methods that are used in this thesis in order to examine and analyse the research problems and research questions. By applying specific quantitative measurements for abstract terms, I will provide the survey design and analyse approach.

3.1 Research Design

Corresponding to the research problem, a set of specific analytical questions are introduced in this flowchart, which makes it clear of what is needed to be examined and with which statistical method respectively.
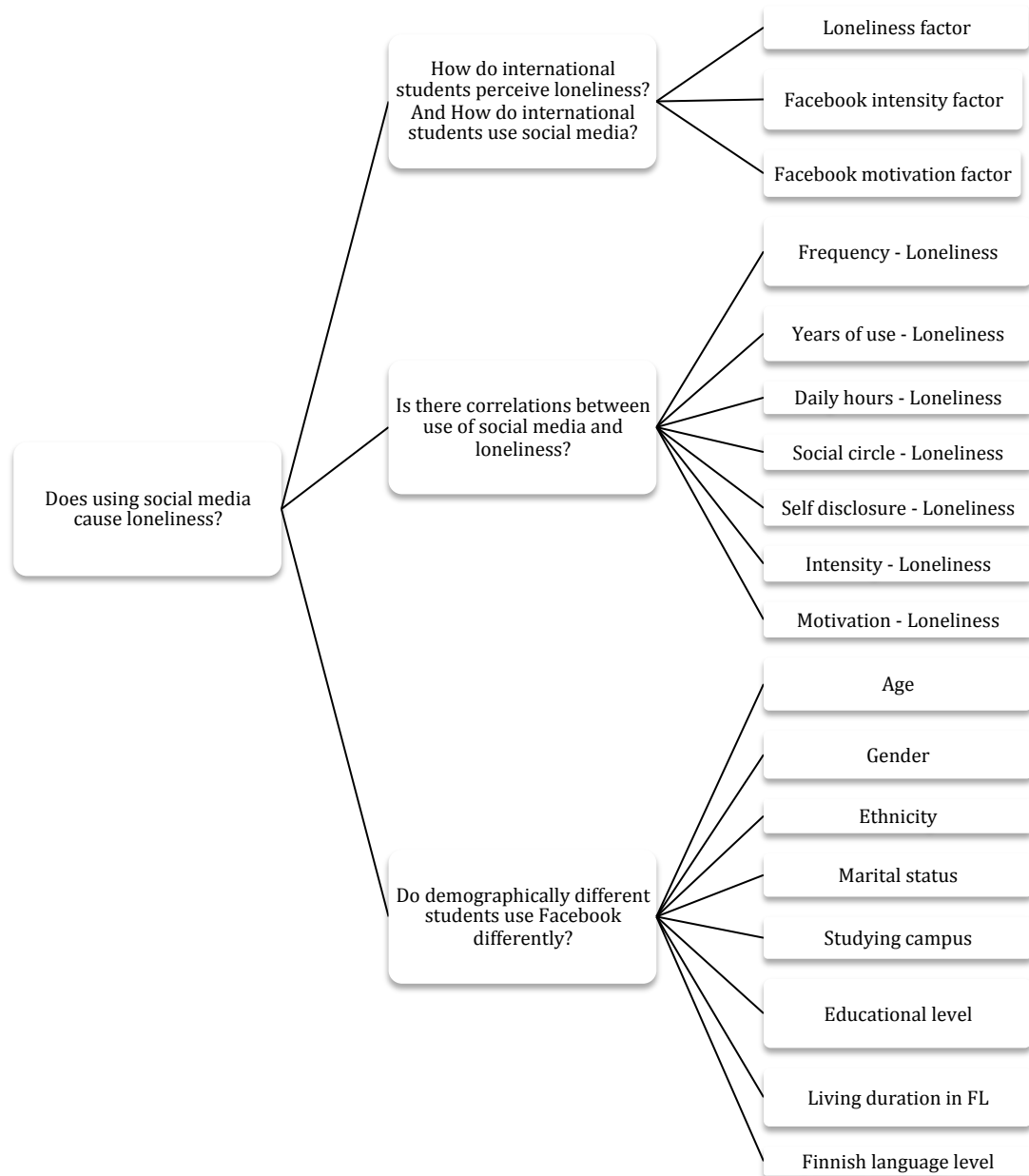
Loneliness factor

Facebook intensity factor

Facebook motivation factor

How do international
students perceive loneliness?
And How do international
students use social media?

Frequency - Loneliness

Years of use - Loneliness

Daily hours - Loneliness

Is there correlations between
use of social media and
loneliness?

Social circle - Loneliness

Self disclosure - Loneliness

Intensity - Loneliness

Motivation - Loneliness

Does using social media
cause loneliness?

Age

Gender

Ethnicity

Marital status

Studying campus

Do demographically different
students use Facebook
differently?

Educational level

Living duration in FL

Finnish language level

Figure 2: Structure of research questions

3.2 Survey Design

Questionnaire is a research method that collects information by asking questions in paper. The researcher compiles the questions that are to be studied into questionnaires, and get the answers by post, face to face or follow-up visits. Nowadays online survey is quite common and convenient. The key to the use of questionnaires is the preparation of questionnaires, selection of subjects, and analysis of the results.

As shown in the graph, in order to solve the research problems, the original data that can be obtained through questionnaire should contain the information of three parts: loneliness, social media and demographic background. Therefore, the survey is designed accordingly. A short description of the purpose of the study, information of anonymity and handling of the data is endorsed in the beginning of the survey. Part one contains demographic information such as age, gender, ethnicity, marital status; and also other background information which could potentially cause different perception of loneliness and different habit of social media due to cultural adaptation, these are studying campus, educational level, living years in Finland, and Finnish language level. Part two contains the adjusted UCLA loneliness scale, which contains 20 observable items linked to loneliness. Part three contains social media usage patterns, these include frequency, using years, weekly average hours, number of Facebook friends, self-disclosure degree, activity intensity and motivation. In part three, self-disclosure degree, intensity and motivation are composed of 6, 28, 24 observable items respectively.

3.3 Measurements

3.3.1 Loneliness Measurement Scale

Russell et al., (1980) have developed the commonly used tool called Revised UCLA Loneliness Scale for the measurement of loneliness, and it has achieved common agreement in the field of social psychology. The scale has 20 statements to examine the loneliness level of the respondents.

Instructions: Indicate how often you feel the way described in each of the following statements. Circle one number for each.				
	Never	Rarely	Sometimes	Often
*1. I feel in tune with the people around me	1	2	3	4
2. I lack companionship	1	2	3	4
3. There is no one I can turn to	1	2	3	4
*4. I do not feel alone	1	2	3	4
*5. I feel part of a group of friends	1	2	3	4
*6. I have a lot in common with the people around me	1	2	3	4
7. I am no longer close to anyone	1	2	3	4
8. My interests and ideas are not shared by those around me	1	2	3	4
*9. I am an outgoing person	1	2	3	4
*10. There are people I feel close to	1	2	3	4
11. I feel left out	1	2	3	4
12. My social relationship are superficial	1	2	3	4
13. No one really knows me well	1	2	3	4
14. I feel isolated from others	1	2	3	4
*15. I can find companionship when I want it	1	2	3	4

*16. There are people who really understand me	1	2	3	4
17. I am unhappy being so withdrawn	1	2	3	4
18. People are around me but not with me	1	2	3	4
*19. There are people I can talk to	1	2	3	4
*20. There are people I can turn to	1	2	3	4

Figure 3: The Revised UCLA Loneliness Scale, by Russell et al, 1980

The score should calculate the items with asterisks reversely. In this thesis, I will slightly adjust the Revised UCLA Loneliness Scale so as to simplify the analysis process. More specifically, the adjustment is to replace the reverse items in the normative tense like the other items. This makes the calculation easier and can simply sum up a score of loneliness.

3.3.2 Usage patterns of social media

Facebook is chosen as the example of social media; most of the questions are developed according to the systematic features of Facebook. However, some other questions about general social media use are included in the survey. Social media frequency question is conducted via self-report basis, by rating from one to five. Facebook duration means how long has someone been using Facebook, which is ordinal year numbers. Daily hours spent on Facebook is self-measured by ordinal hours. Social circle in this case, can be referred to as number of Facebook friends, which is also ordinal number.

There are three other questions that consist of Likert scale with multiple items. Facebook self-disclosure, which consists of six aspects of information that one discloses in Facebook. These six items are extracted from Facebook profile information list.

(1=strongly disagree, 3=neutral, 5=strongly agree)

	1	2	3	4	5
work & education information	◯	◯	◯	◯	◯
places you've lived	◯	◯	◯	◯	◯
contact & basic info	◯	◯	◯	◯	◯
family & relationship	◯	◯	◯	◯	◯
Details about you (such as nickname, favorite quotes)	◯	◯	◯	◯	◯
Life events	◯	◯	◯	◯	◯

Figure 4: Self-disclosure Measurement.

Facebook Intensity means how often one involves in Facebook activities. 28 items, based on reviewing empirical studies, compose these activities. By comparing the Facebook activities list of Pempek, Yermolayeva and Calvert (2009, p.234) and Valentine (2013, p.21-22), Valentine's (2013, p.21-22) Facebook 28 items list was more close to current natures of Facebook and was applied in this thesis as measurement of Facebook activities and intensity. (1=strongly disagree, 3=neutral, 5=strongly agree)

	1	2	3	4	5
Looking at/reading other people's profiles	◯	◯	◯	◯	◯
Looking at photos	◯	◯	◯	◯	◯
Reading/responding to news feeds	◯	◯	◯	◯	◯
Reading my own wall posts	◯	◯	◯	◯	◯
Reading posts on others' walls	◯	◯	◯	◯	◯
Posting on others' walls	◯	◯	◯	◯	◯
Reading private messages from others	◯	◯	◯	◯	◯
Sending private messages	◯	◯	◯	◯	◯
Looking at groups	◯	◯	◯	◯	◯
Responding to/reviewing events or invitations	◯	◯	◯	◯	◯
Adding or removing friends	◯	◯	◯	◯	◯
Updating current status or news feeds	◯	◯	◯	◯	◯
Looking at video links	◯	◯	◯	◯	◯
Tagging or untagging photos	◯	◯	◯	◯	◯
Adding or removing groups	◯	◯	◯	◯	◯
Commenting on photos	◯	◯	◯	◯	◯
Creating events and sending invitations	◯	◯	◯	◯	◯
Creating groups	◯	◯	◯	◯	◯
Getting information from others	◯	◯	◯	◯	◯
Interacting with groups	◯	◯	◯	◯	◯
Posting videos or links to videos	◯	◯	◯	◯	◯
Posting photos	◯	◯	◯	◯	◯
Posting links to other websites	◯	◯	◯	◯	◯
Updating or editing profile	◯	◯	◯	◯	◯
Interacting with the live chat function	◯	◯	◯	◯	◯
Interacting with applications, quizzes or games	◯	◯	◯	◯	◯
Browsing company or organization pages	◯	◯	◯	◯	◯
Interacting with the company or organization pages	◯	◯	◯	◯	◯

Figure 5: Facebook Intensity Measurement, referred to Valentine (2013, p.21-22).

Another preexisting measurement of motivations for using Facebook was adopted in this research. Leung (2001) developed the Instant Messaging Motivation Scale according to the traditional theory of use and gratification by Rubin (1979), and tested multiple times. Quan-Haase & Young (2010) adopted Leung's motivation scale and used in the examination of Facebook motivation. (1=strongly disagree, 3=neutral, 5=strongly agree)

	1	2	3	4	5
To kill time	◯	◯	◯	◯	◯
Because it is entertaining	◯	◯	◯	◯	◯
Because I enjoy it	◯	◯	◯	◯	◯
Because it is fun	◯	◯	◯	◯	◯
Because it is a pleasant rest	◯	◯	◯	◯	◯
Because it relaxes me	◯	◯	◯	◯	◯
To get away from pressures and responsibilities	◯	◯	◯	◯	◯
To get away from what I am doing	◯	◯	◯	◯	◯
To put off something I should be doing	◯	◯	◯	◯	◯
To thank people	◯	◯	◯	◯	◯
To let people know I care about them	◯	◯	◯	◯	◯
To show others encouragement	◯	◯	◯	◯	◯
To help others	◯	◯	◯	◯	◯
To show others that I am concerned about them	◯	◯	◯	◯	◯
To not look old-fashioned	◯	◯	◯	◯	◯
To look stylish	◯	◯	◯	◯	◯
To look fashionable	◯	◯	◯	◯	◯
Because I need someone to talk to or be with	◯	◯	◯	◯	◯
Because I just need to talk about my problems sometimes	◯	◯	◯	◯	◯
To forget about my problems	◯	◯	◯	◯	◯
To make friends of the opposite sex	◯	◯	◯	◯	◯
To be less inhibited chatting with strangers	◯	◯	◯	◯	◯
To meet people (new acquaintances)	◯	◯	◯	◯	◯
To feel involved with what's going on with other people	◯	◯	◯	◯	◯

Figure 6: Facebook Motivation Measurement, referred to Quan-Haase & Young (2010)

3.4 Data Collection

The survey was conducted through google forms1 online. There were two methods of obtaining the survey answers: one method is to post the survey in International student groups in University of Helsinki in Facebook, and the other method is to send email of survey link by membership email list through the International student organization of University of Helsinki. Both email and Facebook group contain not only the survey questionnaire, but also a brief introduction of the purpose of the study, information about use of the data, information about confidentiality and incentives. Survey samples were collected randomly via the Facebook groups and emails, and participants filled the survey voluntarily. The incentives are conducted by random lottery draw among all participants who have submitted their contact information through a separate link after completing the survey. A separate link is to ensure that all of the survey questions remain anonymous and will not connect with the contact information. The incentives are introduced in the survey process in order to obtain a satisfactory amount of sample for the quantitative analysis.

In total, 112 international students filled in the survey, no missing data, which makes the data of all the respondents valid for the research. Likert (1932) scale is a commonly recognized tool to measure attitude in the field of social science. In this study, the survey design applied Likert scale in the measurement of subjective concepts. SPSS (version 22.0) will be applied as the quantitative analysis software. Factor analysis, analysis of variance, and correlation analysis are chosen as analytical tools in this thesis.

3.5 Factor Analysis

Field (2013, p.666) mentioned that factor analysis was used to identify the

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1 https://docs.google.com/forms/

clusters of variables, which served in three aspects: to measure things that could not be directly measured, in order to discover the structure of a group of variables; to reduce the variable sets while reflecting the original information as much as possible; to establish a set of questionnaires to measure an abstract variable.

The aim of factor analysis is to reduce dimensionality, when the operational measurements and observable variables share a common variance but cannot be observed directly (Bartholomew, Knotts, & Moustaki, 2011). Factor analysis helps to identify the underlying common factors. The entire group of variables can be differentiated into different groups of factors, which are ideally uncorrelated with the other factors. Three factor analyses will be applied for loneliness, Facebook intensity, and Facebook motivation, in other words "gratification sought". In each of these three abstract concepts, over 20 observable variables were included for the purpose of operational definition. Factor analysis is the method of dimensionality reduction, after the process of factor analysis; a few uncorrelated common factors could be identified to explain the major influential factors of each concept.

3.6 Correlation Analysis

Correlation is a method that tests if statistical relation exists between variables[1]. Correlation analysis measures the independent and dependent variables in two ways, the strength of the relationship and the direction, in other words, positive or negative of the correlation[2].

Correlation analysis is used to identify possible connections between two variables and the positive or negative relationship between the independent variable and dependent variable. In this thesis, multiple correlations were

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1   https://www.surveysystem.com/correlation.htm)

2
http://forrest.psych.unc.edu/research/vista-frames/help/lecturenotes/lecture11
/overview.html

applied in order to identify the possible causal relationship between variables. In the correlation analysis, Loneliness scale that contains 20 variables on a scale of 1-4 is calculated as a sum that represents the loneliness level of each individual. Similarly, Facebook self-disclosure which contains of 6 variables on a scale of 1-5 is calculated as a sum which represents the Facebook self-disclosure level of each individual; Facebook Intensity which consists of 28 variables on a scale of 1-5 is calculated as a sum which represents the how intensive each participant use Facebook; Facebook motivation which consists of 24 variables on a scale of 1-5 is calculated as a sum which represents how strong the motivation is for each respondent to use Facebook. Loneliness as dependent variable, several social media usage patterns as independent variables, correlations are tested between each of them in order to identify whether social media usage cause loneliness and in which specific way.

3.7 Analysis of Variance/ANOVA

Analysis of Variance is also called ANOVA, which is the method to compare the difference of means when there are more than two groups in a linear model (Field, 2013, p.430).

It is a statistical method to examine the statistical differences among the mean value of different groups. In this thesis, I would like to examine whether different demographic groups have different media habit. The demographic independent variables are: age, gender, ethnicity, marital status, studying campus, educational level, living duration in Finland, and Finnish language level. The dependent variables are Facebook Intensity and Facebook motivation.

4. Analysis
4.1 Factor Analysis results

In this chapter, three factor analyses are carried out with SPSS (version 22.0): the loneliness factor, the Facebook intensity factor, and the Facebook motivation factor. This chapter corresponds to the research question Q1, and the factor

results will answer to Q1. Such data analysis consists of many statistical graphs. However, to maintain a clear and understandable layout, SPSS output graphs are only fully demonstrated in 4.2.1 as an example to show how the analysis is processed. The other two factor analyses are conducted in a same way with same set of graphs which only differs in result numbers, therefore, the less relevant graphs will not be shown in the main text but only the one rotated component matrix and the results. At the end of each factor analysis, a short descriptive analysis will be included to present the general loneliness/Facebook intensity/Facebook motivation level of the sample, which also refelcts the population.

4.1.1 Loneliness factors

In this chapter, I will present five tables for the factor analysis process in order to present how the factor analysis is done. And statistical explaination will be added at the end of each table.

1. The precondition for factor analysis

Figure 7: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.925
Bartlett's Test of Sphericity	Approx. Chi-Square	1280.886
	Df	190
	Sig.	.000

Explanation: Normally, when the KMO＞0.7, it indicates that factor analysis model suits the data and the examination effect is good. In this case, the KMO value for this model is 0.925, which means the model test works well. In addition, the Sig. value of the spherical test is .000, which passed the significance test.

Factor analysis can be applied.

2. Indicator variables communalities

Figure 8: Communalities

	Initial	Extraction
VAR1	1.000	.633
VAR2	1.000	.416
VAR3	1.000	.714
VAR4	1.000	.617
VAR5	1.000	.457
VAR6	1.000	.551
VAR7	1.000	.688
VAR8	1.000	.560
VAR9	1.000	.479
VAR10	1.000	.671
VAR11	1.000	.639
VAR12	1.000	.671
VAR13	1.000	.610
VAR14	1.000	.471

VAR15	1.000	.598
VAR16	1.000	.672
VAR17	1.000	.601
VAR18	1.000	.686
VAR19	1.000	.715
VAR20	1.000	.731

Extraction Method: Principal Component Analysis.

Explanation: VAR 1- 20 are the 20 tems that defines loneliness according to theory and empirical study, which can be refered to in the methodology chapter. The extraction column mainly represents the common degree of variables when the feature roots are extracted according to the specified conditions, and reflects the explanation proportion of the common factor to the variance of each variable. The above table shows that only the variables of 2,5,9,14, "I have nobody to talk to", "nobody really understands me", "my interests and ideas are not shared by others", "I am starved for company" have a lower degree of commonality. Other variables are all above 50%. This can basically reflect the information of original data, that is to say, the original variable information can basically explain the extracted factors.

3. Common factors interpretation of principal components

Figure 9: Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings	Rotation Sums of Squared Loadings

	Tot al	% of Varia nce	Cumul ative %	Tot al	% of Varia nce	Cumul ative %	Tot al	% of Varia nce	Cumul ative %
1	9.3 86	46.9 30	46.930	9.3 86	46.9 30	46.930	4.8 13	24.0 66	24.066
2	1.4 78	7.39 2	54.322	1.4 78	7.39 2	54.322	3.7 68	18.8 40	42.906
3	1.3 16	6.57 9	60.902	1.3 16	6.57 9	60.902	3.5 99	17.9 96	60.902
4	.98 6	4.93 0	65.831						
5	.84 6	4.23 0	70.062						
6	.72 3	3.61 4	73.676						
7	.65 2	3.25 9	76.935						
8	.57 9	2.89 4	79.829						
9	.54 5	2.72 4	82.553						
10	.49 3	2.46 5	85.018						
11	.44 7	2.23 6	87.254						

12	.438	2.190	89.444						
13	.357	1.786	91.229						
14	.320	1.601	92.831						
15	.303	1.515	94.345						
16	.287	1.434	95.779						
17	.237	1.186	96.965						
18	.224	1.122	98.086						
19	.200	1.001	99.088						
20	.182	.912	100.000						

Extraction Method: Principal Component Analysis.

Explanation: Three factors with eigenvalues greater than 1 were obtained. In the initial factor solution, the first factor has a characteristic root value of 9.386, and the variance contribution rate is 46.930%; the second factor has a characteristic root value of 1.478, and the variance contribution rate is 7.392%; the third factor's characteristic root value is 1.316, the variance contribution rate is 6.579%, and the cumulative variance contribution rate is 60.902%. This indicates that the first three factors could account for more than 60% of the total

variance of the original variables. Although 60% is not high, it is a common result in actual research projects. Generally speaking, in the actual project of market research or social science research, if there is a rigorous research design and previous qualitative research, if the variance analysis of factor analysis is over 50%, it can be accepted. After rotation changing the variance contribution rate of each factor, the gap between the variance contribution rates of the first three factors is significantly reduced. Therefore, the first three factors can well reflect the information of the original variables, while the other factors have smaller characteristic roots and have less contribution to interpreting the original variables and can be discarded. In summary, here hree factors are extracted.

4. Factor naming and interpretation

Component matrix

Figure 10: Component Matrix[a]

	Component		
	1	2	3
VAR1	.604	-.266	.445
VAR2	.598	-.174	.168
VAR3	.630	.414	.381
VAR4	.613	-.192	.452
VAR5	.653	.021	.172
VAR6	.618	-.384	.148
VAR7	.728	-.129	.375

VAR8	.738	.115	.052
VAR9	.640	-.076	-.252
VAR10	.720	-.319	-.225
VAR11	.722	.278	-.201
VAR12	.742	.272	-.217
VAR13	.737	-.242	-.093
VAR14	.671	.086	.117
VAR15	.728	-.101	-.241
VAR16	.790	.012	-.220
VAR17	.710	.311	-.017
VAR18	.661	-.302	-.398
VAR19	.812	.054	-.232
VAR20	.512	.682	.058

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Rotated component matrix

Figure 11: Rotated Component Matrix 1

	Component		
	1	2	3

VAR9	0.616		
VAR10	0.731		
VAR13	0.628		
VAR15	0.674		
VAR16	0.664		
VAR18	0.803		
VAR19	0.672		
VAR1		0.764	
VAR2		0.521	
VAR4		0.744	
VAR5		0.475	
VAR6		0.603	
VAR7		0.726	
VAR3			0.711
VAR8			0.485
VAR11			0.593
VAR12			0.598
VAR14			0.431
VAR17			0.631
VAR20			0.851

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

1. Rotation converged in 7 iterations.

Explanation: When the factor load is rotated orthogonally, the higher the variable's loading on the factor, the more information the variable contains. After the rotation, the factor loading matrix shows that factor 1 has a larger loading on "my interests and ideas are not shared by others", "I feel left out", "superficial social relationships", "nobody really knows me well", "feel isolated from

others""difficulty to make friends", and "feel shut out and excluded". These seven items are related to be isolated and named as "social isolation" factor; factor 2 has a larger loading on "unhappy doing so many things alone", "nobody to talk", "lack companionship", "nobody really understands me", "there is no one I can turn to", "waiting for people to call or write" these six items are related to lack of social support, named as "lack social support"factors; factor 3 has a larger loading on "cannot tolerate being so alone", "not close to anyone", "feel completely alone", "unable to reach out and communicate with others", "starve for company", "unhappy being so withdrawn", "people are around me but not with me". These seven items can be grouped as "lack sense of belonging" factor.

In conclusion, three underlying factors of loneliness are social isolation, lack social support, and lack sense of belonging. The main factors and their original items can be displayed as the following table.

Loneliness Factors		
Social isolation	Lack social support	Lack sense of belonging
My interests and ideas are not shared by those around me; I feel left out; superficial social relationships No one really knows me well; I feel isolated from others; It is difficult for me to make friends; I feel shut out and excluded by others;	I am unhappy doing so many things alone; I have nobody to talk to; I lack companionship; I feel nobody really understands me; I find myself waiting for people to call or write; There is no one I can turn to.	I cannot tolerate being so alone; I am no longer close to anyone; I feel completely alone; I am unable to reach out and communicate with those around me; I feel starve for company; I am unhappy being so withdrawn; People are around me not with me

Figure 12: Loneliness factor result

Descriptive analysis of Loneliness factors

After the extracting and renaming the factors, the original loneliness items are recoded into three new variables. The Likert scale sticks to the original scale, namely, on a scale of one to four. 1= I never feel this way, 2= I rarely feel this way, 3= I sometimes feel this way, 4= I often feel this way.

Statistics

		Social isolation	Lack social support	Lack sense of belonging
N	Valid	112	112	112
	Missing	0	0	0
Mean		2.0268	2.0060	1.9936
Median		2.0000	2.0000	2.0000
Mode		2.00	1.67[a]	1.00
Minimum		1.00	1.00	1.00
Maximum		3.71	3.83	3.86

 a. Multiple modes exist. The smallest value is shown

Figure 13: Loneliness factor descriptives

As shown in the table, the mean value of social isolation is 2.0268; median value is 2; mode is 2; minimum value is 1 and maximum is 3.71. Therefore, we can conclude that international students in UH averagely (Mean) and mostly (Mode) rarely feel social isolation. However, there is big variance among the population, some never (Minimum) feel social isolation while some often (Maximum) feel it. Similarly, international students in UH averagely and mostly rarely feel lack of social support. However, a big variance exists among the population, some never feel lack of social support while some often feel it. For the feeling of lack sense of belonging, averagely they rarely feel that way and mostly never feel it. Big variance also exists; some never feel lack sense of belonging while some often feel it.

4.1.2 Facebook intensity factors

Similarly, eight factors are identified in Facebook intensity: browsing, initiating interaction, updating the status, online communication, online to offline, semi-public interaction, public information, and choose friends. The main factors and their original items can be displayed as the following table.

Figure 14: Rotated Component Matrix 2

	Component							
	1	2	3	4	5	6	7	8
VAR1	0.695							
VAR2	0.836							
VAR3	0.718							
VAR5	0.742							
VAR9	0.446							
VAR13	0.635							
VAR19	0.531							
VAR4		0.561						
VAR6		0.809						
VAR12		0.655						
VAR15		0.673						
VAR18		0.705						
VAR26		0.618						
VAR28		0.609						
VAR21			0.713					
VAR22			0.627					
VAR23			0.797					
VAR24			0.501					
VAR7				0.877				
VAR8				0.855				
VAR10				0.459				

VAR17					0.834		
VAR20					0.624		
VAR14						0.476	
VAR16						0.599	
VAR25						0.765	
VAR27							0.8
VAR11							0.622

Extraction Method: Principal Component Analysis.

  Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 16 iterations.

Explanation: When the factor load is rotated orthogonally, the higher the variable's loading on the factor, the more information the variable contains. After the rotation, the factor loading matrix shows that factor 1 has a larger loading on "looking at/reading other people's profile", "looking at photos", "reading/responding to news feeds", "reading posts on others' walls", "looking at groups", "looking at video links", "getting information from others". These seven items are related to browsing information on Facebook and can be named as "**browsing**" factor; factor 2 has a larger loading on "reading my own wall posts", "posting on others' wall", "updating current status or news feeds", "adding or removing groups", "creating groups", "Interacting with applications, quizzes or games", "interacting with the company or organization pages", these seven items are related to **"initiating interaction"** factor; factor 3 has a larger loading on "posting videos or links to videos", "posting photos", "posting links to other websites", "updating or editing profile", these four items can be grouped as **"updating the status"** factor; factor 4 has a larger loading on "reading private messages from others", "sending private messages", "looking at groups", these three items are all related with online communication and can be named as **"online communication"** factor; factor 5 has a larger loading on "creating events and sending invitations" and "interacting with groups", and these two items are related with initiating contact with online to

offline activities and can be named as **"online to offline"**; factor 6 has a larger loading on "tagging or untagging photos", "commenting on photos", "interacting with the live chat function" and these three items can be named as **"semi-public interaction"** ;factor 7 has a larger loading on "deading private messages from others" "browsing company or organization pages" and can be named as **"public information"** factor; factor 8 has a larger loading on "adding or removing friends" and can be named as **"choose friends"** factor.

Facebook Intensity factors	Browsing	Looking at/reading other people's profile; Looking at photos; Reading/responding to news feeds; Reading posts on others' walls; Looking at groups; Looking at video links; Getting information from others;
	Initiating interaction	Reading my own wall posts; Posting on others' wall; Updating current status or news feeds; Adding or removing groups; Creating groups; Interacting with applications, quizzes or games; Interacting with the company or organization pages;
	Updating the status	Posting videos or links to videos; Posting photos; Posting links to other websites; Updating or editing profile;
	Online communication	Reading private messages from others; Sending private messages; Looking at groups;
	Online to offline	Creating events and sending invitations;

	Interacting with groups;
Semi-public interaction	Tagging or untagging photos; Commenting on photos; Interacting with the live chat function;
Public information	Reading private messages from others; Browsing company or organization pages;
Choose friends	Adding or removing friends;

Figure 15: Facebook activity intensity factor result

Descriptive analysis of Facebook motivation factors

After the extracting and renaming the factors, the original Facebook intensity factors are recoded into eight new variables. The Likert scale sticks to the original scale, namely, on a scale of one to five. 1= never, 2= occasionally, 3= monthly, 4= weekly, 5= daily.

Statistics

		Browsing	Initiating interaction	Updating the status	Online communication	Online to offline	Semi-public interaction	Public information	Choose friends
N	Valid	112	112	112	112	112	112	112	112
	Missing	0	0	0	0	0	0	0	0
Mean		3.0548	2.1862	1.9933	3.6101	2.1429	2.0357	2.3661	2.3125
Median		3.0000	2.0000	2.0000	3.6667	2.0000	2.0000	2.0000	2.0000
Mode		3.00	2.00	2.00	3.67	1.50[a]	2.00	2.00	2.00
Min		1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00
Max		5.00	4.14	4.00	5.00	4.50	4.33	5.00	4.00

a. Multiple modes exist. The smallest value is shown

Figure 16: Facebook activity intensity factor descriptives

As shown in the table, we can see out of the eight extracted factors, online communication have the highest mean value (3.6101), medium (3.6667) and mode (3.67). This result indicates that international students in UH use

Facebook mostly for online communication. After online communication factor, browsing factor takes the second position, with mean (3.0548), median (3.0000) and mode (3.00). This indicates that browsing is the second most frequent activity that international students use on Facebook. All the other six extracted factors have similar results on mean, median and mode, which are all around 2.000, this indicate that international students occasionally use Facebook for initiating interaction, updating status, online to off, semi-public interaction, public information, choosing friends. However, by looking at the min and max value, all of the variables have a big variance among the population. This indicates that international students in UH use all the Facebook activities with very different intensity from person to person, some never do it and some do it on a daily basis.

4.1.3 Facebook motivation factors

Similarly, seven factors are identified in Facebook motivation: relax and entertainment, emotional connection diverts and relieves real-life pressure, maintains ideal self-image, share problems, socialbility. The main factors and their original items can be displayed as the following table.

Figure 17: Rotated Component Matrix 3

	Component					
	1	2	3	4	5	6
VAR2	0.78					
VAR3	0.887					
VAR4	0.887					
VAR5	0.859					
VAR6	0.693					
VAR10		0.811				
VAR11		0.888				
VAR12		0.816				
VAR13		0.797				

VAR14		0.706			
VAR1			0.656		
VAR7			0.854		
VAR8			0.872		
VAR9			0.787		
VAR15				0.914	
VAR16				0.919	
VAR17				0.761	
VAR22				0.54	
VAR18					0.76
VAR19					0.765
VAR20					0.689
VAR24					0.423
VAR21						0.635
VAR23						0.829

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Explanation: When the factor load is rotated orthogonally, the higher the variable's loading on the factor, the more information the variable contains. After the rotation, the factor loading matrix shows that factor 1 has a larger loading on "because it is entertaining", "because I enjoy it", "because it is fun", "because it is a pleasant rest", "because it relaxes me", this five items are all related to the entertainment aspect of using social media and can be named as "relax and entertainment" factor; factor 2 has a larger loading on "to thank people", "to let people know I care about them", "to show others encouragement", "to help others", "to show others that I am concerned about them", this five items are all about showing emotional support for others and can be named as "interpersonal emotional connection"; factor 3 has a larger loading on "to kill time", "to get away from pressures and responsibilities", "to get away from what I am doing", "to put

off something I should be doing", these four items are closely connected with relieving pressure and get away from real life problems, so that this factor can be named as "divert and relieve real-life pressure"; factor 4 has a larger loading on "to not look old-fashion", "to look stylish", "to look fashionable", "to be less inhibited chatting with strangers", these four items are connected with showing the ideal self and can be named as "maintain ideal self image" factor; factor 5 has a larger loading on "because I need someone to talk to or be with", "because I just need to talk about my problems sometimes", "to forget about my problems", "to feel involved with what's going on with other people", these four items are connected with emotional support therefore can be named as "share problems" factor; factor 6 has a larger loading on "to make friends of opposite sex", "to meet people (new acquaintances)", these two items are related with establishing new relationships and can be named as "sociability" factor.

Facebook Motivation Factors	Relax and entertainment	Because it is entertaining; Because I enjoy it; Because it is fun; Because it is a pleasant rest; Because it relaxes me;
	Emotional connection	To thank people; To let people know I care about them; To show others encouragement; To help others;
	Divert and relieve real-life pressure	To kill time; To get away from pressures and responsibilities; To get away from what I am doing; To put off something I should be doing;
	Maintain ideal self image	To not look old-fashion; To look stylish;

		To look fashionable; To be less inhibited chatting with strangers;
	Share problems	Because I need someone to talk to or be with; Because I just need to talk about my problems sometimes; To forget about my problems; To feel involved with what's going on with other people;
	Sociability	To make friends of opposite sex; To meet people (new acquaintances);

Figure 18: Facebook motivation factor result

Descriptive analysis of Facebook motivation factors

After the extracting and renaming the factors, the original Facebook motivation factors are recoded into six new variables. The Likert scale sticks to the original scale, namely, on a scale of one to five. 1= strongly disagree, 2= somewhat disagree, 3= neutral, 4= somewhat agree, 5= strongly agree.

Statistics

		Relax and entertainment	Emotional connection	Divert and relieve real-life pressure	Maintain ideal self image	Share problems	Sociability
N	Valid	112	112	112	112	112	112
	Missing	0	0	0	0	0	0
Mean		2.9036	2.6625	3.3214	1.8304	2.3237	1.8571
Median		3.0000	2.7000	3.2500	1.5000	2.2500	1.5000
Mode		3.00	2.60	3.00	1.00	1.50	1.00
Minimum		1.00	1.00	1.00	1.00	1.00	1.00
Maximum		5.00	5.00	5.00	4.75	5.00	5.00

Figure 19: Facebook motivation descriptives

As shown in the table, we can see out of the six extracted factors, "divert and relieve real-life pressure" has the highest mean (3.3214), median (3.2500) and mode (3.00) value, which indicates that international students in UH are mostly motivated by "divert and relieve real-life pressure"when they use Facebook. Following up, "relax and entertainment" has the second highest score of mean (2.9036), median (3.0000) and mode (3.00) value. This indicates that international students in UH also use Facebook quite much for "relax and entertainment". Unlike the other two factor analyses that have around the same score of the rest of the factors, this factor analysis shows varied scores. The lowest scores are "maintain ideal self" factor and "sociability" factor, with mean and median and mode lower than 2.0000. This tells that international students use Facebook barely for the purpose of "maintain ideal self" or "sociability".

4.2 Correlation Analysis

Multiple social media usage patterns as independent variables, loneliness as dependent variable. Multiple correlations are carried out to examine the correlation between loneliness (variable 10) and social media usage frequency (variable 11), between loneliness and social media usage duration (variable 13), between loneliness and recent social media average hours per day (variable 14), between loneliness and social circle (variable 15), between loneliness and online self-disclosure (variable 17), between loneliness and Facebook intensity (variable 18), between loneliness and Facebook motivation (variable 19). Here is the correlation graph for all the aforementioned tests. And this chapter of correlation analysis corresponds to research question Q2, the correlation results will answer to Q2.

Figure 20: Correlations

	VAR10	VAR1	VAR1	VAR1	VAR1	VAR1	VAR1	VAR11

				11	13	14	15	17	18	9
Spearman's rho	VAR10	Correlation Coefficient		1.000	.001	-.033	-.022	-.242[*]	.046	.128	.236[*]
		Sig. (2-tailed)		.	.988	.726	.814	.010	.632	.179	.012
	VAR11	Correlation Coefficient		.001	1.000	.130	.244[**]	.068	.097	.145	.129
		Sig. (2-tailed)		.988	.	.170	.010	.479	.308	.127	.176
	VAR13	Correlation Coefficient		-.033	.130	1.000	.294[**]	.460[**]	.015	.029	-.139
		Sig. (2-tailed)		.726	.170	.	.002	.000	.877	.761	.144
	VAR14	Correlation Coefficient		-.022	.244[**]	.294[**]	1.000	.299[**]	.172	.271[**]	.155

	Sig. (2-tailed)	.814	.010	.002	.	.001	.070	.004	.103
VAR15	Correlation Coefficient	-.242*	.068	.460**	.299**	1.000	.260**	.224*	.006
	Sig. (2-tailed)	.010	.479	.000	.001	.	.006	.018	.949
	N	112	112	112	112	112	112	112	112
VAR17	Correlation Coefficient	.046	.097	.015	.172	.260**	1.000	.446**	.317**
	Sig. (2-tailed)	.632	.308	.877	.070	.006	.	.000	.001
VAR18	Correlation Coefficient	.128	.145	.029	.271**	.224*	.446**	1.000	.601**
	Sig. (2-tailed)	.179	.127	.761	.004	.018	.000	.	.000
VAR1	Correlation on	.236*	.129	-.139	.155	.006	.317**	.601**	1.000

9	Coefficient								
	Sig. (2-tailed)	.012	.176	.144	.103	.949	.001	.000	.

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Explanation: Out of the seven correlation tests, only two show statistical significance. The above table shows that the P value of the correlation between loneliness and the social circle (number of Facebook friends) is 0.010, which is less than 0.05. The significance test shows that there is a significant difference between loneliness and the number of Facebook friends; In addition, the coefficient is negative, indicating a negative correlation between the number of Facebook friends and loneliness, that is, **as the number of Facebook friends increases, the feeling of loneliness will be significantly reduced**. The P value of the correlation test between loneliness and Facebook motivation is 0.012, which is less than 0.05. The significance test shows that there is a significant correlation between loneliness and Facebook motivation; the correlation coefficient is positive, indicating there a positive correlation between Facebook motivation and loneliness, that is, **as the Facebook motivation improves, feeling of loneliness will increase significantly**. However, there is no significant correlation between Facebook intensity and loneliness, so we cannot conclude whether using Facebook a lot contributes to the loneliness.

4.3 Analysis of Variance/ANOVA

This chapter of ANOVA analysis corresponds to research question Q3, and the results will answer to Q3.

F-test 1: demographics matters when it comes to Facebook intensity?

Figure 21: Tests of Between-Subjects Effects

Dependent Variable: VAR18 (Facebook intensity score)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	11.066[a]	37	.299	1.175	.274
Intercept	14.528	1	14.528	57.079	.000
VAR1	1.260	3	.420	1.650	.185
VAR2	2.456	3	.819	3.217	.028
VAR3	.038	1	.038	.149	.701
VAR4	2.340	7	.334	1.313	.256
VAR5	.076	2	.038	.149	.862
VAR6	.859	2	.429	1.687	.192
VAR7	1.088	3	.363	1.425	.242
VAR8	1.521	7	.217	.854	.547
VAR9	1.977	8	.247	.971	.465
Error	18.834	74	.255		
Total	741.195	112			

Corrected Total	29.900	111			

a. R Squared = .370 (Adjusted R Squared = .055)

Explanation: According to F-test, there is no significant difference in the following demographic items: age, from where, ethnicity, marital status, studying campus, level of education, living duration in Finland, Finnish language level.

However, Facebook intensity is significantly different on gender, with a variance value of 3.217. For the specific performance of Facebook intensity on gender, I also performed a comparison of grouped means. I found that the mean of gender's three options in the Facebook intensity was 2.524 for female, 2.499 for male, and prefer not to say is 2.250. This means that the female use Facebook more intensively than male and people with unknown gender.

F-test 2: demographics matters when it comes to Facebook motivation?

Figure 22: Tests of Between-Subjects Effects

Dependent Variable: VAR19 (Facebook motivation score)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	14.883[a]	37	.402	1.177	.272
Intercept	15.809	1	15.809	46.273	.000
VAR1	2.282	3	.761	2.227	.092
VAR2	.133	3	.044	.129	.942
VAR3	.285	1	.285	.834	.364

VAR4	5.071	7	.724	2.120	.049
VAR5	.588	2	.294	.861	.427
VAR6	1.214	2	.607	1.776	.176
VAR7	1.042	3	.347	1.017	.390
VAR8	1.718	7	.245	.718	.657
VAR9	.750	8	.094	.274	.972
Error	25.282	74	.342		
Total	774.694	112			
Corrected Total	40.165	111			

a. R Squared = .371 (Adjusted R Squared = .056)

Explanation: According to F-test, there is no significant difference in the following demographic items: age, gender, from where, marital status, studying campus, level of education, living duration in Finland, Finnish language level.

However, Facebook motivation is significantly different on ethnicity, with a variance value of 2.120. I also made a comparison of group means and found that the means for Facebook motivation on ethnicity were 2.526 for White, 2.483 for Hispanic or Latino, 2.083 for Black or African American, and 2.044 for Native American or American Indian, Asian/Pacific islander is 2.707, Other is 2.125. That means the motivation of using social networking tools ranks from high to low as: Asian/Pacific islander, White, Hispanic or Latino, others, Black or African American and Native American or American Indian.

5. Conclusion

Answering to Q1

Three factors are extracted from loneliness: social isolation, lack social support, lack sense of belonging; Eight factors are extracted from Facebook activity intensity: browsing, initiating interaction, updating the status, online communication, online to offline, semi-public interaction, public information, choose friends. Six factors are extracted from Facebook motivation: relax and entertainment, interpersonal emotional connection, divert and relieve real-life pressure, maintain ideal self-image, share problem, sociability.

The descriptive analysis results present the general condition of how international students in University of Helsinki perceive each loneliness factors, the intensity of how they use each Facebook activity factors, and the motivation level of each Facebook motivation factor. Some meaningful results are as follows: averagely students occasionally feel lonely, which shows international students in UH are generally having a healthy psycological status, namely, the perceived loneliness level is enough low; Online communication and browsing randomly on Facebook are the two major activities that international students in UH do when they use Facebook; they use Facebook quite much for the purpose of "divert and relieve real-life pressure" and "relax and entertainment", and not much for the purpose of "maintain ideal self" or "socialbility". In addition, big variances are observed, which indicates that international students of UH form a very heterogenous population that individuals are very varied and different from each other.

Answering to Q2

Out of the seven correlation tests between different aspects of social media usage pattern and loneliness, only two of them showed a statistical significance. Frequency, years of use, daily average hours, self-disclosure, and intensity have no significant correlation with the feeling of loneliness. That is to say, these aspects of social media usage patterns do not influence the perception of loneliness among international students in University of Helsinki. However, there

is a negative correlation between the number of Facebook friend and loneliness. This means, as the number of Facebook friends increases, the feeling of loneliness decreases. There is a positive correlation between Facebook motivation and loneliness. This means, as Facebook motivation increases, the feeling of loneliness will increase too. However, according to use and gratification theory, it is more likely that loneliness is the cause of higher motivation of Facebook use. This will be discussed more in the discussion chapter later.

Answering to Q3

The ANOVA analyses showed differences in age, country of origin, ethnicity, marital status, studying campus, level of education, living duration in Finland, Finnish language level made no difference when it came to individual's Facebook Intensity. There is only gender difference in Facebook intensity, more specifically; females use Facebook more intensively than males than unknown gender. At the same time, there is no significant correlation between Facebook motivation and age, gender, marital status, studying campus, educational level, living duration in Finland, Finnish language level. That is to say, these aspects of backgrounds make no difference when it comes to the intensity of Facebook use and the motivation of Facebook use. However, ethnicity makes a difference when it comes to Facebook motivation. Motivation of using Facebook ranks from high to low as: Asian/Pacific islander, White, Hispanic or Latino, others, Black or African American and Native American or American Indian.

6. Discussion
6.1 Loneliness motivates Facebook use

In this research, there is no statistically significant correlation between use intensity of Facebook and loneliness. This answers to the research problem, among the sample group of this study, the use of social media does not necessarily cause loneliness. However, another correlation was identified, which led the research to another possible explanation. The data analysis results showed that among the questionnaire participants, there was a positive causal

relationship between the motivation of using Facebook and the feeling of loneliness. Previous relevant studies showed that excessive use of Internet led to loneliness (Kim, Larose, & Peng, 2009; Pittman & Reich, 2016; Caplan, 2005; Kim et al., 2009). Such loneliness is due to the neglection of offline social network. Lonely people usually have deficient social skills and therefore lack of confidence when it comes to sociability. This makes them reluctant to make more social contacts offline with others. As excessive Internet use causes loneliness, and loneliness will cause failure in offline social activities and social relationships. In other words, will loneliness drive people to have stronger motivation for using social media. Spitzberg and Canary (1993) also proved that the intensive feeling of loneliness would make one negative and withdrawn in social activities. Bessiere et al. (2008) proposed the social augmentation hypothesis that explained online social communication provided alternative social resources for interaction. This theory supported the inference that lonely people had stronger motivation to use online platform to interact with people, and use Facebook to augment their social world.

According to use and gratification theory, people use social media which meet up with their need of gratification sought, and media consumption must be rewarding in one way or another, either immediate or delayed (Schramm, 1949). Facebook serves as a social tool that fulfills the needs of lonely individuals. Song et al. (2014) conducted a Meta analysis to find the causal relationship between Facebook use and loneliness. They used the Meta model to test the causal relationship in both directions: Facebook use causes loneliness and loneliness causes Facebook use. Their model proved that it is loneliness that causes Facebook use. More specifically, shyness and lack of social support lead to loneliness, and loneliness leads to Facebook use. According to the studies above, this inference may exist. It is difficult and complicated to determine a causal relationship between behaviour and psychological status. According to the use and gratification research that Finn and Gorr (1988) did, they discovered that heavy loneliness media users are mostly very passive and have a tendency of compulsory use, but they can hardly feel gratification from media use. This

compulsory use corresponds to the literature reviews of social media addiction that reflects behavioral addictive symptoms. However, we can combine with the previous studies and claim that excessive Facebook use will lead to loneliness. In fact, it is most likely that social media use cause loneliness, and drives people to use social media to make social interactions online in order to relieve loneliness. For Internet use, perhaps "use" is the cause, and "loneliness" is the result. However, for social media, perhaps "loneliness" is the cause, and "use" is the result. Amichai and Ben (2003) also mentioned about this possibility (i.e. loneliness causes social media use), and tested the hypothesis via complicated methods.

6.2 More popular, less lonely

As shown in the literature review, students use social media with the purpose of maintaining offline friendship by online interaction, instead of building new relationship with strangers online (Ellison stal, 2007; Sheldon, 2008). Having more friends on Facebook indicates a larger social capital or social circle of individuals. As Facebook is mainly a place for maintaining offline relationship, one who has more friends on Facebook is likely to have more friends offline. This also indicates stronger social skills in order to develop such relationships offline in the first place. Kleck et al. (2007) carried out an experimental research to support the inference that the more friends one had in Facebook, the more positive judgement from sociability point of view one would get, and people prefer to socialize with attractive ones. Tong, Van Der Heide, and Langwell (2008) said in their research that having a lot of friends on Facebook is positively associated with being popular and attractive. Hence, people use the number of friends on Facebook to infer social attractiveness.

Studies showed that attractiveness was connected with social acceptance, which further connected with popularity among people (Berry & Miller, 2001; Eagly et al., 1991). In associate with the data analysis result of this thesis, it can be concluded that having more Facebook friends reveals a stronger social popularity, which reduces the feeling of loneliness.

6.3 Evaluation of the study

This study is my own thoughts on the basis of many empirical studies on relevant issues. However, with the limitation of knowledge, time and effort, this thesis is only about the relationship between social media use and the loneliness of university students. It is an exploratory, preliminary, and rough discussion through one typical social network site in the current global communication sphere. There are still many possibilities for improvement and exploration in the depth and breadth of the research. In all, this study has the following three major shortcomings that have room for improvement.

First of all, in this survey, the representative sample can be improved. The study would have been more meaningful if it can reflect a wider population. However, considering the practical possibility, inadequacies of time, effort, funding and so on, it is difficult to have a holistic survey of international students in Finland. The understanding and investigation are mainly based on the author's own personal connections, and the sample is not random or large enough.

Secondly, this study selects Facebook, which only represents partly of the social media that are used by international students. Nowadays, more and more social media have emerged and become popular, affecting the social life and psychological status of users. Apart from Facebook, which is selected in this study, there are many other influential social media that are worth focusing on, such as Instagram and Snapchat. A comparison study between different social media can be meaningful to explore how different type of social media influence people and in what ways. The conclusions are only based on the results of selected sample and design questionnaires. We have reason to believe that the impact of social media usage on the loneliness perception of university students is more complex and diverse.

Thirdly, this research is just an exploratory study in this field. There is still much room for improvement in research design and research method. Although there

were some studies that had begun to explore this field, the research in this area was relatively deficient. Few documents are available for reference, and some of them are quite old. Since social media field is a field where things change fastly, and out of date reference may not well reflect the current situation. There may be a lack of relevant and up-to-date reference when designing research methods including questionnaires and measurements.

In summary, this thesis can be improved in survey sample and size, comparison study of representative social media, more up-to-date research methods and measurements.

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8. List of tables

9. Appendix: Survey

Linking loneliness and social media

For students at the University of Helsinki & Facebook users.
All information is handled confidentially and the results will be reported anonymously.
Please answer all questions as honestly as possible :)

*Required

1. **1. What is your age?** *
   Mark only one oval.

   ◯ Under 18

   ◯ 19-23

   ◯ 24-29

   ◯ 30-35

   ◯ Over 36

2. **2. What is your gender?**
   Mark only one oval.

   ◯ Male

   ◯ Female

   ◯ Prefer not to say

   ◯ Other: _____

3. **3. Where are you from?** *
   Mark only one oval.

   ◯ Finland

   ◯ Other

4. **4. Please specify your ethnicity (or race).** *
   Mark only one oval.

   ◯ White

   ◯ Hispanic or Latino

   ◯ Black or African American

   ◯ Native American or American Indian

   ◯ Asian / Pacific Islander

   ◯ Other: _____

5. **5. What is your marital status?** *

Mark only one oval.

- ( ) Single, never married
- ( ) Married or domestic partnership
- ( ) Widowed
- ( ) Divorced
- ( ) Separated

6. **6. Which campus do you belong to?** *

Mark only one oval.

- ( ) City Center
- ( ) Viikki
- ( ) Kumpula
- ( ) Meilahti

7. **7. What is your level of study in University of Helsinki?** *

Mark only one oval.

- ( ) Bachelor's degree
- ( ) Master's degree
- ( ) PhD degree
- ( ) Exchange
- ( ) Other: _____

8. **8. How long have you been in Finland?** *

Mark only one oval.

- ( ) Less than 1 year
- ( ) 1-3 years
- ( ) 3-5 years
- ( ) Over 5 years
- ( ) Other: _____

9. **9. What is your Finnish language level?** *

Mark only one oval.

- ( ) I can't speak Finnish at all
- ( ) Beginner （A1)
- ( ) Elementary (A2)
- ( ) Intermediate (B1)
- ( ) Upper Intermediate (B2)
- ( ) Native or bilingual

Part II Loneliness

Read carefully and Indicate how often you feel the way described in each of the following statements.
Choose one number for each. There are 20 statements in this section.
1 indicates "I never feel this way"
2 indicates "I rarely feel this way"

3 indicates "I sometimes feel this way"
4 indicates "I often feel this way"

10. **Please evaluate on a scale from 1 to 4, how often you feel the way described in each of the following statements. (1=never, 2=rarely, 3=sometimes, 4=often)** *

NOTE FOR MOBILE USER: To see all the answer options, you may have to scroll left. It is also helpful to turn the phone in a horizontal position.

Mark only one oval per row.

	1	2	3	4
I am unhappy doing so many things alone	○	○	○	○
I have nobody to talk to	○	○	○	○
I CANNOT tolerate being so alone	○	○	○	○
I lack companionship	○	○	○	○
I feel as if nobody really understands me	○	○	○	○
I find myself waiting for people to call or write	○	○	○	○
There is no one I can turn to	○	○	○	○
I am no longer close to anyone	○	○	○	○
My interests and ideas are NOT shared by those around me	○	○	○	○
I feel left out	○	○	○	○
I feel completely alone	○	○	○	○
I am unable to reach out and communicate with those around me	○	○	○	○
My social relationships are superficial	○	○	○	○
I feel starved for company	○	○	○	○
No one really knows me well	○	○	○	○
I feel isolated from others	○	○	○	○
I am unhappy being so withdrawn	○	○	○	○
It is difficult for me to make friends	○	○	○	○
I feel shut out and excluded by others	○	○	○	○
People are around me but NOT with me	○	○	○	○

Part III: Social media usage

11. **1. How often do you use social media** *

1=Never, 2=Yearly, 3=Monthly, 4=Weekly, 5=Daily
Mark only one oval.

	1	2	3	4	5	
Never	○	○	○	○	○	Daily

12. **2. What social media do you usually use? (multiple)** *

Tick all that apply.

- ☐ Facebook
- ☐ Facebook messenger
- ☐ Instagram
- ☐ Twitter
- ☐ Snapchat
- ☐ LinkedIn
- ☐ Tinder
- ☐ Pinterest
- ☐ Reddit
- ☐ Whatsapp
- ☐ Viber
- ☐ QQ
- ☐ Wechat
- ☐ Tumblr
- ☐ LINE
- ☐ Kakaotalk
- ☐ Other: _____

13. **3. How long have you been using Facebook?** *

Mark only one oval.

- ◯ Less than one year
- ◯ 1-3 years
- ◯ 3-5 years
- ◯ Over 5 years

14. **4. In the past week, approximately how many hours did you averagely spend in Facebook PER DAY?** *

Mark only one oval.

- ◯ Less than 1 hour
- ◯ 1-3 hours
- ◯ 3-5 hours
- ◯ Over 5 hours

15. **5. How many Facebook friends do you have?** *

Mark only one oval.

- ◯ Less than 100
- ◯ 101-299
- ◯ 300-499
- ◯ 500-699
- ◯ Over 700

16. **6. Why are you on Facebook? (Multiple)** *

Tick all that apply.

- [ ] Friend suggested it
- [ ] Everyone I know is on Facebook
- [ ] Help others keep in touch with me
- [ ] Find classmates
- [ ] Received a promotional e-mail of Facebook
- [ ] Get to know more people
- [ ] Network in general
- [ ] Find course infomation
- [ ] Find dates
- [ ] Find people with mutual interests
- [ ] Find jobs

17. **7. How much do you disclose yourself about the following information on Facebook? (1=very little, 5=very much)** *

NOTE FOR MOBILE USER: To see all the answer options, you may have to scroll left. It is also helpful to turn the phone in a horizontal position.

Mark only one oval per row.

	1	2	3	4	5
work & education information	◯	◯	◯	◯	◯
places you've lived	◯	◯	◯	◯	◯
contact & basic info	◯	◯	◯	◯	◯
family & relationship	◯	◯	◯	◯	◯
Details about you (such as nickname, favorite quotes)	◯	◯	◯	◯	◯
Life events	◯	◯	◯	◯	◯

18. **8. Facebook Intensity: Indicate how often you engage in the following Facebook activities. (1=never, 2=occasionally, 3=monthly, 4=weekly, 5=daily) ***

NOTE FOR MOBILE USER: To see all the answer options, you may have to scroll left. It is also helpful to turn the phone in a horizontal position.
Mark only one oval per row.

	1	2	3	4	5
Looking at/reading other people's profiles	◯	◯	◯	◯	◯
Looking at photos	◯	◯	◯	◯	◯
Reading/responding to news feeds	◯	◯	◯	◯	◯
Reading my own wall posts	◯	◯	◯	◯	◯
Reading posts on others' walls	◯	◯	◯	◯	◯
Posting on others' walls	◯	◯	◯	◯	◯
Reading private messages from others	◯	◯	◯	◯	◯
Sending private messages	◯	◯	◯	◯	◯
Looking at groups	◯	◯	◯	◯	◯
Responding to/reviewing events or invitations	◯	◯	◯	◯	◯
Adding or removing friends	◯	◯	◯	◯	◯
Updating current status or news feeds	◯	◯	◯	◯	◯
Looking at video links	◯	◯	◯	◯	◯
Tagging or untagging photos	◯	◯	◯	◯	◯
Adding or removing groups	◯	◯	◯	◯	◯
Commenting on photos	◯	◯	◯	◯	◯
Creating events and sending invitations	◯	◯	◯	◯	◯
Creating groups	◯	◯	◯	◯	◯
Getting information from others	◯	◯	◯	◯	◯
Interacting with groups	◯	◯	◯	◯	◯
Posting videos or links to videos	◯	◯	◯	◯	◯
Posting photos	◯	◯	◯	◯	◯
Posting links to other websites	◯	◯	◯	◯	◯
Updating or editing profile	◯	◯	◯	◯	◯
Interacting with the live chat function	◯	◯	◯	◯	◯
Interacting with applications, quizzes or games	◯	◯	◯	◯	◯
Browsing company or organization pages	◯	◯	◯	◯	◯
Interacting with the company or organization pages	◯	◯	◯	◯	◯

19. **9. I use Facebook to......(1=strongly disagree, 3=neutral, 5=strongly agree) Evaluation on a scale from 1 to 5, how much do you agree with the following statements** *

NOTE FOR MOBILE USER: To see all the answer options, you may have to scroll left. It is also helpful to turn the phone in a horizontal position.
Mark only one oval per row.

	1	2	3	4	5
To kill time	◯	◯	◯	◯	◯
Because it is entertaining	◯	◯	◯	◯	◯
Because I enjoy it	◯	◯	◯	◯	◯
Because it is fun	◯	◯	◯	◯	◯
Because it is a pleasant rest	◯	◯	◯	◯	◯
Because it relaxes me	◯	◯	◯	◯	◯
To get away from pressures and responsibilities	◯	◯	◯	◯	◯
To get away from what I am doing	◯	◯	◯	◯	◯
To put off something I should be doing	◯	◯	◯	◯	◯
To thank people	◯	◯	◯	◯	◯
To let people know I care about them	◯	◯	◯	◯	◯
To show others encouragement	◯	◯	◯	◯	◯
To help others	◯	◯	◯	◯	◯
To show others that I am concerned about them	◯	◯	◯	◯	◯
To not look old-fashioned	◯	◯	◯	◯	◯
To look stylish	◯	◯	◯	◯	◯
To look fashionable	◯	◯	◯	◯	◯
Because I need someone to talk to or be with	◯	◯	◯	◯	◯
Because I just need to talk about my problems sometimes	◯	◯	◯	◯	◯
To forget about my problems	◯	◯	◯	◯	◯
To make friends of the opposite sex	◯	◯	◯	◯	◯
To be less inhibited chatting with strangers	◯	◯	◯	◯	◯
To meet people (new acquaintances)	◯	◯	◯	◯	◯
To feel involved with what's going on with other people	◯	◯	◯	◯	◯