UNIVERSITY OF GOTHENBURG

PERSONALITY AND THE USE OF SOCIAL NETWORK SERVICE

- *A CASE STUDY ON FACEBOOK*

MENGBING ZHANG

Thesis for Master in Communication

Acknowledgement

First and foremost, I would like to sincerely thank my supervisor, Arvid Karsvall, for his valuable guidance and support during the process of the project. He has provided me with many useful suggestions patiently, and made many efforts to help me with the project.

I would also like to thank Francesco Carpanini for telling me to be brave and insistent, as well as for his critical review of my paper. Many thanks for your patient and encouragement. If it were not you cheered me up at the first place, I would not have started writing at all. Thanks for telling me my possibilities.

Also allow me to express my sincerely gratitude to my sweet roommate, Xiaolin Yan, as well as my dear friend, Renand Grando, who have suffered from my daily blue and supported each other during the semester. Thanks for sharing my pain and fear. I could not have done the thesis in time without you!

Last but not least, I would also like to thank all of my respondents who have generously shared their time and idea with me. They have provided me with honest and valuable answers. Without them, the study would not even exist.

Abstract

The research investigates the associations between personality traits and Facebook usage. The personality has been measured by the Five Factor Model; Facebook usage has been studied from several aspects, including frequency of visiting and posting, time spent on Facebook, how intimacy one feel when communicating with friends, self-disclosure level on Facebook, and preferred in conflict resolution styles when communicating on Facebook. A quantitative self-report has been used to collect data. The results show there are some associations between personality and Facebook usage. The research also compares respondents' differences in intimacy level, self-disclosure level, and preference in conflict resolution styles between face-to-face communication and Facebook communication. The comparison results provide more evidences on how communication medium affect the process of communication.

Keywords: *computer mediated communication, communicative affordance, Big Five personality traits, social network service*

Table of Content

Chapter 1. Introduction

The present study aims at finding associations between personality traits and social network services usage. The study has chosen Facebook as a representative case of study. In this chapter, the researcher presents a brief introduction to social network services, the relevance of communication and Facebook, and also a detailed explanation to research purpose and research question.

Introduction to Social Network Services

A social psychologist from Harvard University, Stanley Milgram, conducted an experiment in the United States in 1967 Milgram (1967). Milgram wanted to determine how many connections a person needs to reach another person she has never met. He chose 160 participants in Omaha, who were required to forward a package to a target person, a stockbroker in Boston. Only one rule applied to the experiment: each participant could only send the package to one friend or acquaintance who she knew on a first-name basis, and who might by chance knows the target person. Milgram tracked the progress of each package through returned tracer postcards, and he discovered that the shortest chain contained only two intermediate connections, and the longest ten. Thus, the average number of intermediate connections needed to reach an unknown person was six. These experiment results were developed into a concept known as Six Degrees of Separation, which later became the theoretical background of early social network services (SNS).

The first social network site, according to Boyd and Ellison (2007), SixDegrees.com was founded upon this concept and launched in 1997. The primary aim of the website was to help users maintain existing social connections, and expand their social network by visualizing the social ties of their first, second and third connections. After SixDegrees.com, came many more community websites supporting social visualization. Boyd and Ellison (2007) defined social network site as "web-based services that allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system" (p.211). According to this definition, the next big social network sites are Friendster, launched in 2002, Myspace and LinkedIn, both released in 2003, Facebook in 2004, and Twitter in 2006. Social network service entered a period of rapid growth.

Studies on Facebook Communication and Social Network Service

Let us focus on what scholars have been studying, especially from a communication perspective. Communication through social network service shares features with other

forms of computer-mediated communication (CMC, Herring, 2007), which greatly differs from face-to-face interaction. An individual can communicate with a larger audience, despite distance or time differences, or both, and the messages of the communication can be stored online for a very long time. Thus, it is possible for a person to act dramatically differently from her own daily communication behaviours.

There is a great deal of research starting from a self-presenting management perspective. For example, Krämer and Winter (2008) studied the individual association between one's self-esteem, extraversion, self-efficacy level and self-presentation characteristics. Mazer, Murphy, and Simonds (2007) focused on the effect of a teacher's self-disclosure on her students' motivation and classroom climate.

There are some differences in communication behaviours among different people. Communication researchers are curious about not only how people behave differently, but also why. Gajjala (2007) studied the differences in online social networking communication behaviours from a perspective of ethnicity and race. DeAndrea, Shaw, and Levine (2010) examined how cultural background influences on an individuals' posting on Facebook.

Interpersonal communication is the dominant purpose of home internet using (Kraut et al., 1998). As a form of CMC, internet use especially social network services has vast consequences for society in terms of interpersonal relationships and internet users' psychosocial well-being (Kraut et al., 1998). On the one hand, internet provides a quicker and more convenient method to communicate with each other and has become a popular tool for accessing information and socializing. Online communication has a positive influence on an individual's social circles (both local and distant), trust in people, community involvement and decreased depression rate (Kraut et al., 2002). On the other hand, online communication causes an increasing level of stress, and a decreasing level of interest in local community activities, which possibly makes people feel more isolated from each other (Kraut et al., 1998).

Research Question of Present Study

To understand whether or not individual differences have an impact on the contradictory consequences of online communication, as well as why and how different people act in different ways on social network websites, the present research investigated the correlations and associations between personality traits and social network uses. Facebook has been chosen as a study case because it is representative of social network website. Personality traits served as the starting point of the study since "personality is a leading factor in understanding why people behave the way they do on the internet" (Amichai-Hamburger & Vinitzky, 2010, p. 1290).

In order to measure an individual's personality, the research has adopted the Five Factor Model, and it includes *extroversion*, *agreeableness*, *neuroticism*, *conscientiousness* and *openness to experience* (Goldberg, 1992). However, it should be noticed that FFM is not a flawless model: the model is a language-dependent theory (Lodhi, Deo, & Belhekar, 2002; McCrae & John, 1992; Trull & Geary, 1997), which means when translating the FFM traits to different languages, some countries need to add a sixth dimension or adjust the content of the five traits. Also, due to the method of how the theory was developed, the FFM is not exhaustive (Block, 1995), which means that the FFM cannot describe all personality differences of different people. The detailed critical discussion of the model can be found in Chapter 2.

The research question is formulated as follows:

How do the big five personality traits associate with an individual's use of Facebook?

The following aspects of Facebook usage have been investigated in the study, including frequency and time spent using Facebook, attitude to Facebook, intimacy level with friends, self-disclosure level and the preferred of conflict resolution style.

Chapter 2. Theoretical Background and Literature Review

In this chapter, the theoretical background of the study is explained. Firstly, a personality theory, Five Factor Model (FFM) which is the fundamental of the search, is introduced in the first section of the chapter. Then, there is an introduction of *computer-mediated communication* (CMC) and the impact of CMC. In the third section, the researcher provides information on the background of the studied case, which is Facebook. In the fourth section, the researcher compares the research methods and findings of two previous studies. The last section introduces some critical definitions and concepts that were used in empirical analysis.

Personality and Measuring Personality: the Five Factor Model

The exact definition of personality has been debating in the field of psychology because the lack of agreement on what human nature is (Feist & Feist, 2009). Although no definition has been accepted by all psychologists, there was a growing demand to come up with a systematic model to describe and categorize personality traits at the end of 19th century (John & Srivastava, 1999). Personality theorists developed the so-called Traits Psychology based on a general consensus that a personality should contain "a pattern of relatively permanent traits and unique characteristics that give both consistency and individuality to a person's behaviour" (Feist & Feist, 2009, p. 4).

The personality theory used in this research, Five Factor Model (FFM), also known as the Big Five personality traits, was proposed by Tubes and Christal (Goldberg, 1992) and developed by Goldberg (1990). The model proposed the existence of a universal personality structure that can be categorized into the five broad dimensions: *extroversion, agreeableness*, *conscientiousness*, *neuroticism*, and *openness to experience* (Goldberg, 1990, 1992, 1993; John & Srivastava, 1999; McCrae & John, 1992). Each of these personality traits contains a continuum scale from one extreme to another, which reflects different degrees of orientation on the trait.

Extroversion: *Extroversion* reflects the degree of an individual's engagement with things outside oneself (Rothmann & Coetzer, 2003). An individual with a high level of *extroversion* tends to be extrovert, talkative, and energetic (Costa & McCrae, 1992), and a low level of *extroversion* indicates a low level of social involvement and energy level (Rothmann & Coetzer, 2003).

Agreeableness: The trait of *agreeableness* is associated with a person's attitude towards social harmony, in other words, the trait reflects a person's willingness to maintain a good relationship with others (Rothmann & Coetzer, 2003). People with a high level of

agreeableness tend to consider people around them to be honest and trustworthy, and have a high tendency to please others; Whereas people with a low level of *agreeableness* tend to be sceptical about other's motivations, and are more likely to compete with rather than please others (Rothmann & Coetzer, 2003).

Conscientiousness: This trait reflects an individual's level of self-discipline, which is associated with the a willingness to be well-organized, hardworking, and reliable (Rothmann & Coetzer, 2003). People with a high level of *conscientiousness* tend to be perfectionist and goal-orientated, and those with a low level of the trait are associated with less motivation to succeed and less goal-oriented sub-personalities (Costa & McCrae, 1992).

Neuroticism: According to Norris, Larsen, and Cacioppo (2007), this trait shows an individual's tendency to experience negative emotions, such as depression, stress, anxiety, guilt and anger. The high level of *neuroticism* reflects a personality with high level of self-consciousness and vulnerability in stressful situations.

Openness to experience: The trait *openness to experience* is relevant to an individual's level of curiosity and creativity. A high level of the trait reflects a personality with a curious and appreciative attitude to divergent thinking and unconventional beliefs (Judge, Heller, & Mount, 2002), and a low level indicates an individual's preference for familiarity and conservatism.

Cross-cultural studies (Lodhi et al., 2002; McCrae & John, 1992; Trull & Geary, 1997) identified the model is language-dependent. Some countries may need to add a sixth personality dimensions (McCrae & John, 1992), or adjust the one of the five dimensions (McCrae & John, 1992; Trull & Geary, 1997). Still, in general the FFM is applicable and validity across cultures (McCrae & John, 1992).

This personality traits model has been employed in the field of communication studies, such as the topics of leadership styles (Judge & Bono, 2000; Lim & Ployhart, 2004), interpersonal communication (Lim & Ployhart, 2004), and social media use (Lonnqvist, Itkonen, Verkasalo, & Poutvaara, 2014). The model can provide researchers with a useful framework to assess individual differences and therefore to further understand human communication phenomenon. However, it should be noted that the model is not "perfect". There is criticism of the model that it is not exhaustive (Block, 1995), in other words the model cannot describe all the differences among individuals. It also has been criticized that the model is not based on any theory, but empirical findings of the model developer (Eysenck, 1992).

Computer Mediated Communication

Defined by Herring (2007), computer-mediated communication (CMC) refers to the human-to-human interactions whose messages are carried by stationary computers or mobile devices such as cell phones and laptops. Popular forms of CMC include email, messengers, chat rooms, and social network sites. Comparing with face-to-face communication or handwritten communication, the type of communication is transformational in a sense that it has fewer requirements on distance between communicators or the amount of audience at once. CMC is quickly developing and has been utilized in both an individual's private life and organizational context (Simon, 2006).

With the rapid development of communication technology, many researchers have investigated the effects of CMC and many conflicting findings have been presented: On the one hand, some literatures suggested CMC is less effective and suitable than face-to-face communication (Anolli, Villani, & Riva, 2005; Bordia, 1997; Straus, 1996) and has led to the increasing of offensive behaviours online (Bordia, 1997; Straus, 1996) . On the other hand, CMC may give increasing opportunities for communication (Harman, Hansen, Cochran, & Lindsey, 2005) and promote the possibility to foster closer relationships (Anolli et al., 2005) and increase work efficiency , e.g. by forming a task-oriented environment (Jonassen & Kwon, 2001). The following is a detailed discussion on the debate of CMC.

Nevertheless, some scholars, such as Simon (2006), still claim that face-to-face interaction is the most optimal mode of communication, and CMC is less natural and "presents greater challenges to and demands more effort from the communicators" (p.350). The main reason behind this claim is that: many CMC in different degrees lacks social context, non-verbal messages or feedbacks that are important elements in face-to-face interactions (Anolli et al., 2005; Bordia, 1997; Herring, 2001; Straus, 1996). With the development of communication technology, some forms of CMC, for instance a video or webcam based CMC, provide a relatively richer social context than the text based CMC. Video or webcam based communication can deliver more visual information than messages. However, temperature, humidity, smells and the sense of touch, which are very important contents of social context and non-verbal messages, still cannot be delivered through videos (as of writing). When comparing CMC with traditional written communication, the interactions in the forms of CMC frequently use abbreviations or incomplete sentences, which some scolars consider not grammatical, correct or coherent. This has led to some arguments that consider CMC as "'impoverished' and unsuitable for social interaction" (Herring, 2001, p. 618).

Another negative impact of CMC is concerned with the increased incidence of offensive behaviours, such as flame, deceit and lack of empathy, which caused by a sense of

anonymity brought by the anonymous nature of CMC (Anolli et al., 2005; Bordia, 1997; Herring, 2001, 2007; Straus, 1996) is another reason why scholars censure this form of communication. As previous researchers found that the anonymous nature of CMC can lead to a person's deindividuation behaviours in other words anti-normative behaviours, and "a loss of awareness about one's own and others' individuality" (Walther, 2011, p. 450).

Many scholars, e.g. Kraut et al. (2002), concerned with the phenomena that CMC is "replacing" face-to-face communication in many situations, although the quality of the conversation or social involvement does not increase. The convenience of CMC have led many people to use communication technology for hours alone, instead of engaging with their friends or families, consequently CMC has related to the increased feeling of loneliness and depression (Bargh & McKenna, 2004). Previous studies have pointed out that this growing form of communication have had significant influence on children who are at risk of mental problems and antisocial behaviours (Harman et al., 2005).

Though the main researches on CMC focused on its negative impact, some researchers found that the use of CMC can help an individual to express herself in a better way than during face-to-face communication (Anolli et al., 2005; Bargh & McKenna, 2004; Kraut et al., 2002). Previous studies have found that the anonymity of the communication medium provides communicator a less constrained environment that they can freely express themselves (Bargh, 2002; Bargh & McKenna, 2004; Reingold, 1993) and other technological communication mediums are becoming "[places] where people often end up revealing themselves far more intimately than they would be inclined to do without the intimidation of screens and pseudonyms" (Reingold, 1993). In Ferriter's (Ferriter, 1993) research, which compared outcomes of psychiatric interviews carried out in face-to-face and CMC forms, interviewees were more likely to be more honest and report more symptoms in interviews using CMC. Bargh (2002) applied Rogers' conception of self to explain the tendency of disclosing more when communicating through screens. According to Rogers' theory (Kalat, 2010), one's identity consists of three parts: the perceived self (how people think about you), the real self (the fact that how you are) and the ideal self (the expectation that you hold to yourself). Rogers believed that when there is incongruence between the real self and the ideal self, the person will have difficulties to accept herself, thus have difficulties in communicating with others. On the contrary, if the person manages to accept her real self, "[…] the person could express [the inner feelings] more freely in his or her interactions with others" (Bargh, 2002, p. 34). CMC provides a communicator a greater room for privacy, and one is less pressured by the ideal self (own expectations) and perceived self (others' expectations placed on the person), therefore, "the costs and risks of social sanctions for what we say or do are greatly reduced" (Bargh, 2002, p. 35). In this sense, CMC has a positive impact on its communicators and can promote one's sense of real self.

7

CMC may also promote more opportunities to get social supports from people with the same needs, because it has less geographic restrictions (Kraut et al., 1998) and "[free] people from the […] isolation brought on by stigma, illness, or schedule" (Kraut et al., 1998, p. 1017) In this way, CMC is beneficial to one's psychosocial wellbeing.

Suggested by a study on CMC's impact on work efficiency (Jonassen & Kwon, 2001), the workplace adopting CMC as the main communication method has a more productive outcome than the workplace employing face-to-face communication method. The increasing work efficiency can be a result of lacks in emotional interaction in CMC, as a consequence form a task-oriented environment.

On the whole, CMC can have positive or negative impact on an individual's identity, work performance, life satisfaction and other aspects of psychosocial wellbeing; and whether the positive or negative consequences play a main role seems to depend on the individual use of CMC and the basic motivation of employing CMC.

Background of Facebook

When Facebook launched in 2004, it was only accessible to Harvard University students. Although the website already contained the main features of a social network service, in line with Boyd and Ellison's (2007) definition, it only served a small community. With the explosion of its user population, the website re-launched in 2006 and opened registration the public (Zuckerberg, Hughes, Moskovitz, & Saverin, 2010). In 2007, the second year it opened to the public, the website had 21 million active users. In 2008, the monthly active user in total reached 175 million, which made it one of the most famous service online (Boyd & Ellison, 2007). The number continued growing and hit one billion in 2012 (Boyd & Ellison, 2007), which was a milestone for Facebook that it finally surpassed Myspace and became the world's largest social network website. A study in the same year found that Facebook had a significant impact, especially among college students, revealing that around 98% of them have at least one Facebook account (Lee, 2012). Clearly, however, Facebook had a wider impact: the service played important roles in the fields of education (Roblyer, McDaniel, Webb, Herman, & Witty, 2010; Shiu, Fong, & Lam, 2010), marketing (Holzner, 2008), politics (Galston, 2001) and many other areas.

There are many possible reasons for the flourishing of Facebook, and one is perhaps is the rapid growing of social media environment, which encourages people to present themselves in a quicker and more strategic way (Boyd & Ellison, 2007). Some of the most frequently used features of Facebook are status updates, photography or video post, like share, and Facebook Messenger, which allow users to communicate with friends in either a synchronous or an asynchronous way. This multifunctional characteristic provides a

platform for users to organize their responses and to present themselves in a more positive way.

However, it is noticeable that the "side effects" of Facebook are becoming more and more salient. Being overwhelmed by information (Li, Xing, Wang, Zhang, & Wang, 2013), for example, wastes time and energy, leads both directly and indirectly to a lower level of work efficiency. That is one of the reasons why Facebook have become controversial. Other phenomena closely associated with using Facebook, such as online bullying (Kwan & Skoric, 2013), have also led many people to avoid the web service.

Previous Study on Personality and the Usage of Social Network Service

One's personality is a significant component of one's identity (Amichai-Hamburger & Vinitzky, 2010). Correlation studies on personality traits and communication behaviours provides one of the starting points for researchers to understand why people behave differently in CMC. The previous studies differ from the psychological variables and aspects of SNS usage or using behaviours they focused on. Other researches have contradictory conclusions, although they used the same psychological variables and focused on similar aspects of Facebook. The conflicting conclusions may origin from the different research methods they adopted. However, in general, studies show at least some associations between personality traits and social network usage (Amichai-Hamburger & Vinitzky, 2010; Ross et al., 2009).

Ross et al. (2009) , for example, is the earliest study of correlation between personality and social network usage. In the study, 97 respondents answered a self-reported questionnaire on personality traits and competency factors on Facebook use, including frequency of using Facebook, attitudes towards Facebook, and the habits of posting self-identified information. The personality traits questionnaire adopted NEO-PI-R (NEO Personality Inventory Revised) test, which is a 243 terms questionnaire and measures one's five personality traits according to Five Factor Model. The study included 97 respondents from the same university and found that (1) *extroversion* was positively related to the number of Facebook groups one joined; (2) people with high tendency of *neuroticism* preferred to post messages on Facebook wall, whereas those with low tendency of *neuroticism* preferred to use the album feature of Facebook; (3) *openness to experience* was positively related to one's willingness to use Facebook and familiar level of using Facebook; (4) the level of *extraversion* or *agreeableness* were both not associated with Facebook friends one had; (5) the level of *conscientiousness* was not associated with the time spent on Facebook.

Amichai-Hamburger and Vinitzky (2010) adopted the same personality traits test, focused on a similar set of Facebook usage (including frequency of using, the number of friends and groups one has, and status updating or picture posting behaviours) and examined

9

similar hypotheses of the research Ross et al. (2009) conducted. However, the research carried out with a different method. Instead of using a self-report questionnaire, they collected and analysed the actual Facebook profiles of the respondents. Some conclusions were the same, for instance the level of agreeableness was not associated with Facebook friends one had; openness to experience is positively related to one's willingness to adopt Facebook as a communication tool. Part of the findings were supplementary to the study Ross et al. (2009), for example, the research found (6) highly extroverted people tended to put less personal information in their Facebook profile, such as contact information, education or work experience, relationship status etc., than the introvert; (7) people with higher level of neuroticism tended to share more self-identity information, such as uploading their own pictures, on Facebook; (8) they tended to use Facebook messenger less frequently; there was (9) a U-shape correlation between one's level of agreeableness and the number of pictures uploaded to Facebook; (10) a U-shape correlation with putting contact information on Facebook; and (11) the level of conscientiousness was positively related to one's Facebook friends.

However, there were also contradictory results between the studies. Amichai-Hamburger and Vinitzky (2010) found that (12) an individual's level of extroversion was positively associated with the Facebook friends she has, but was not associated with the number of Facebook groups one joined. Whereas, Ross et al. (2009) found, as presented in previous findings 1 and 4, a correlation between Facebook groups one have and extroversion, but not Facebook friends amount. This difference can be caused by the difference of research methods, which will be explained later.

Another conflicting finding was the association between the level of neuroticism and photography posting and uploading. Amichai-Hamburger and Vinitzky (2010) found (13) there is a U-shape correlation between one's level of neuroticism and the behaviours of posting their own photos on Facebook, whereas Ross et al. (2009) found there was a pure negative correlation between the two factors.

There are at least two possible explanations for this incongruent conclusion: one is that the conflictive conclusion can be an indication of different motives associated with posting self-identify information; another explanation is that different research methods have led to the different results.

One study adopted a self-report questionnaire, and another one analysed respondents' Facebook profiles. The potential limitation for the first type of study is the research does not have control on whether or not the respondent were telling lies. Also, different respondents may hold different values to the same scale. For instance, a respondent, who answered "very dislike" putting personal information on file, might not have higher level of disagreement than another respondent who answered "dislike". For the later research

method, the researchers only analysed selected elements of Facebook use, and inferred the conclusion from insufficient evidences. For instance, the conclusion about the correlation between neuroticism and sharing self-identifying information online was based on the data about one's willingness to put their own photography online. It should be noticed that uploading one's own photo should not be the only measure to one's level of sharing self-identifying information, as there are more behaviours associated with sharing self-identify information, and the same behaviour, uploading own photos, may be associated with different motives.

So, a shared limitation for the both studies is that the researchers limited their sample to only university students, which may lead to a biased research result.

Other Key Concepts

Conflict resolutions styles: There are four different conflict management styles have been measured, 1) *positive problem solving*, 2) *conflict engagement*, which means losing control on her own behaviour and attacking the encounter, 3) *withdrawal*, which means the person choose to be silence when encounter a conflict, 4) *compliance*, which indicates a conflict avoiding tendency that not defending for herself. The four categories of the conflict resolutions styles in the research are adopted from Conflict Resolution Styles Inventory (CRSI). The reason choosing this inventory "is based on the conceptual position that relationship maintenance and relationship stability are affected by each partner's individual style of resolving interpersonal conflict" (Kurdek, 1994), which is consistent with the nature of the study that to study individual's differences in communication.

Social compensation theory: The theory is also called "the poor get richer model" (Amichai-Hamburger & Vinitzky, 2010; Ross et al., 2009). In the CMC studies, the social compensation theory has been used to explain an individual's behavioural changes from face-to-face communication and CMC. When an individual does not get sufficient support or fulfil her needs in real life, the person would tend to look for compensation through CMC.

Self-disclosure: in this paper, the term has been considered as the "act of revealing personal information to others" (Archer, 1980, p. 183)

Chapter 3. Research Process and Limitations

In an attempt to investigate and examine the hypotheses on the correlations of personality traits and the communication behaviours of Facebook users, a study based on a quantitative method was designed, as the nature of quantitative research method is to "generalize from a sample to a population so that inferences can be made about some characteristic, attitude, or behaviour of this population" (Creswell, 2009, p. 146).

In the following sections, the researcher explains the sample and the process of the research, as well as other considerations concerning with the study.

Measurements

There are total of 125 questions in the questionnaire. Depending on different responses, the number of questions actually shown to the respondents was ranging from 64 to 122. The full questionnaire, including all three parts, has been attached in *Appendix 4*.

The questionnaire of the study consists of three sequential parts. The first part contains eight questions about one's background information, including gender, culture background, age group, education level, and employment status.

The second part adopts a self-measure of the FFM of personality test, IPIP-FFM scale (International Personality Item Pool – Five Factor Model, Goldberg, 1992), which contains 50 description about oneself. The questionnaire has used the personality tests without any changes. The personality test scores on a five point scale that is from "strongly disagree" to "strongly agree". Each question is classified to one of the five personality traits, and each answer option is assigned a value. According to respondents' answers, the values of each personality trait are calculated and reflect one's tendency on the personality trait. The test chosen is a simplified version of the standard big five personality test, the NEO-PI-R (Costa & McCrae, 1992). The reason of choosing a simplified version instead of the standard one is due to the large size of the standard version, which is 243 items. Also, as identified by previous researchers (Donnellan, Oswald, Baird, & Lucas, 2006), the differences between two versions of personality tests are statistically not significant. As an incentive of filling out the questionnaire, the result of the personality test was presented at the end of the questionnaire.

The last part of the questionnaire measures the respondents' attitudes and communication behaviours of using Facebook. The questions were designed based on researchers' understanding on previous study about Facebook usage and communication theory. When

the researcher was designing the questions, the researcher kept in mind the research purpose. In the part, a respondent's attitude toward Facebook is assessed by her feedback on Facebook use and the preference and frequency of choosing Facebook as a communication mediation comparing with other existed methods, such as face-to-face communication, phone call, video, email, traditional handwritten letter and so on. The respondent's communication behaviours are assessed by five factors, which are frequency of using Facebook and its different functions, motivation of using the service, a comparison of the depth of self-discourse online and offline, a comparison of the level of intimacy in online and offline communication, and a comparison of one's conflict management behaviours online and offline. In the third part of the questionnaire, there are open questions concerned with one's own attitude toward Facebook, the observation of one's own and others' communication behaviour changes when communicating through Facebook.

Procedure of Recruiting Respondents

The spread of the questionnaire is separated into two phases. The first phase is a pilot test. 18 respondents who were directly invited by the researcher participated in the pilot test. According to the feedbacks of the respondents, some minor modifications were applied. The modifications were mainly concerned with grammar, orders of the questions and technical issues of the questionnaire. Since the main content of the questionnaire was not changed, the results of the pilot test are included into the final analysis of the research. However, the changes may have some influence on the respondents' answerers, which can be considered a flaw of the research.

The second phase of the data collection was open to public over a time length of two weeks. When recruiting respondents from the public, the researcher did not set any criteria for participating in the research in order to have a diverse sample group. The questionnaire was put on a self-host website. The URL of the questionnaire was distributed in different Facebook groups and the online forums of Couresra[1], which is a platform offering open source university courses online. People who read the invitation letter were encouraged to share with their friends or acquaintances. There are 94 respondents participated in the research through the public invitation. The invitation letter is attached in *Appendix 3*.

The ideal sample group expected is that: respondents are evenly spread according to genders, age groups and education backgrounds. Also, it was expected to have as many cultures backgrounds as possible.

---

[1] https://www.coursera.org/

The research actual has recruited respondents from 34 cultures. But the distribution of respondents are not evenly according to genders, ages or education backgrounds. The detailed discussion on research sample can be found in the following section.

Research Sample

In this research, a total number of 142 respondents participated in the survey. Removing 29 incomplete responses, there are 113 completed responses in total. As a pilot test, 18 of the participants were invited by the researcher in person to take part into the pilot test of the questionnaire. After the pilot, the researcher opened the accessibility of the questionnaire to public and posted invitations (invitation letter can be found in *Appendices*) on Facebook groups and Coursera forums. 94 respondents filled out the questionnaire voluntary and anonymously. According to participants' responses, four out of 113 respondents do not hold a Facebook account. Due to the small sample size of Facebook non-users, the researcher did not compare the differences in personality between Facebook users and non-users. In the analysis, only 109 Facebook users' responses have been considered.

Of the 109 respondents, 77 are female, and 32 are male. All the participants were required to identify their age group, to determine the respondents' age distribution. From table 1, it can be found that the major age groups are 25~34 years old with 44 participants and 45~54 years old with 54 participants.

Table 1 Distribution of Respondents' Age Group

Age group	Amount of Participants
Less than 18	2
18~24 years old	16
25~34 years old	44
35~44 years old	16
45~54 years old	54
55~64 years old	11
65~74 years old	1

The majority of the respondents (83%) were older than 25 years. However, the major user group of Facebook's age range is 18~44 years old (Zuckerberg et al., 2010). The distribution of the respondents' age is outside the researcher's expectation: more than 59% of the respondents were older than 45 years. Considering the research had a long length, which is a 125 items questionnaire, people who voluntarily participated and complete the questionnaire may have some certain traits in common.

The table 2 presents the distribution of respondents' education level. As the table showed, the major respondents hold or undertake a bachelor or master degree. There is possible a correlation between the overall high education background and the way responses collected with a similar reason presented above.

Table 2 Distribution of Respondents' Education Level

Education Level	The Amount of Respondents
High school	10
Bachelor's degree or undertaking a bachelor degree	34
Master's degree or undertaking a master degree	46
PhD or undertaking a PhD degree	13
Some vocational/technical training without a degree	5
Other	1

The respondents come from 34 countries/areas (the detailed list of its distribution can be find in *Appendix 5*), the first three countries with the most respondents are United States (16 out of 109), Mainland China (11 out of 109) and United Kingdom (7 out of 109).

Analysis of Quantitative Data

Due to the large amount of data and the limited amount of time to develop the analysis, the research analysis focused mainly on the associations between five personality traits and the selected aspects of Facebook usage. The researcher did not examine all background variables' (age, education level, employment status and the multi-culture experiences) influence on the associations. Only gender was taken into consideration, when the statistical analysis suggested a not significant result. Also, some questions from the questionnaire were removed from further analysis. The questions include preferences on communication mediations, the actual use of different communication mediations, the structure of the respondents' Facebook friends etc. The quantitative analysis mainly focuses on the associations between an individuals' personality traits and the selected aspects of Facebook usage.

The research has involved respondents from 34 countries. However, under each culture category, there is a very limited amount of people which is not enough to represent their culture backgrounds. Thus, the culture background variable was removed from further analysis.

The objective of the study required investigating relationship between the five personality traits (*extroversion, agreeableness, conscientiousness, neuroticism* and *openness to*

15

experience) with background variable gender, presenting data on frequency of Facebook use (including frequency of visiting, updating and time length spent on Facebook), attitude towards Facebook, purpose of using Facebook (teamwork, socializing, and making new friends), respondents' intimacy level when communicating with friends (both online and offline), respondents' self-disclosure level, and respondents' preference to conflict resolution strategies. In the statistical analysis, the software SPSS (Statistical Product and Service Solutions, version 22) was employed to perform the following statistics tests:

- The analysis of variance (ANOVA): the technique was utilized to perform statistical analyses, because the technique is useful to compare three or more variables' mean values (Field, 2013). The technique was used to analyse data on personality traits, frequency of using Facebook and purposes of using Facebook. Before proceeding to analysis, necessary data assumptions were checked carefully and assured to be met.
- Paired-samples *t*-test (also called dependent-means *t*-test): The test was performed to compare respondents' changing on intimacy level with friends, self-disclosure level and conflict resolution preference from face-to-face communication to Facebook communication. "This test is used when there are two experimental conditions and the same participants took part in both conditions of the experiment" (Field, 2013, p. 325).
- Independent *t*-test: the technique was performed to compare the differences in personality traits between respondents with a negative attitude toward Facebook and a positive attitude toward Facebook.
- Pearson Correlation test: the correlation test was employed to perform statistical analysis on the correlation among personality traits, intimacy level with friends, self-disclosure level, and conflict resolution preference, since all the variables are based on a 5 point scales. The correlation tests used the Pearson correlation coefficient which ranges from -1.00 to 1.00. A correlation of 0 indicates that the two variables do not have any correlation; A correlation of [-1, 0) indicates a negative correlation between two variables; a correlation of (0, 1] indicates a positive correlation between two variables.

In all statistical analysis in Chapter 4, a *p*-value of 0.05 is considered as the borderline of statistically significant; a *p*-value under than 0.01 considered as a stronger statistical significance; a *p*-value less than or equal to 0.001 considered as highly statistically significant.

Analysis of Qualitative Data

The questionnaire contains open questions. The research has analysed three of them, including the respondents' comment on Facebook, and respondents' observation about

both their own and others' behavioural changes from offline communication to online communication.

In the analysis process, the researcher adopted some techniques of the grounded theory approach, including identifying keywords and categorising, whose principle is inductive thinking (Bowen, 2006), to analyse the open questions.

By extracting the important words and sentences from the respondents' open question answers, the researcher developed a set of keywords. The category were developed by grouping the relevant keywords together.

Ethical Considerations

The first ethical consideration is concerned with the voluntary aspect of acquiring participants. Detailed information about the research purpose and questionnaire structure was provided before the respondents answered the questionnaire, and the respondents were allowed to quite the questionnaire at any time. It should be noticed that "ethically we cannot force people into a research study…[therefore] ethically we cannot generalize our findings to the non-volunteer population" (Treadwell, 2011, p. 44), since the sample of the study are people who were affected by their attitudes to the study due to their willingness to participate in.

The researcher also kept the principle of anonymity throughout the study. The identities of the respondents were kept anonymous even for the researcher. The data from the study is only used for the research purpose.

Limitations of the Study

One of the limitations of the present study is the very broad nature. As discussed previously, personality traits are very hard to exhaustively describe. At the same time "Facebook usage" can be studied from many different perspectives. In the present research, the researcher has only chosen several perspectives.

Second limitation is that the major research method in the project is a self-rating report, which requires respondents to rate their own behaviours on a four-point or five-point scale, instead of direct observation. This may lead to some possible error for the study caused by the inconsistent values respondents hold. For instance, an individual rated herself a 5 (completely opens up to friends) on self-disclosure level. However, she may not disclose more than another individual who rate herself a 4 on the same question. Also, a self-report questionnaire can lead to another issue: there may be a gap between what people claim they do and what they actually do. The respondents might have just provided the answers they

thought they should do. There are possibility that the respondents exaggerate or omit some information in order to keep consistence with their own claims. Open questions have been set in order to expand the respondents' answers and encourage the respondents to reflect on their own thoughts. Hence the qualitative data provide a useful material to interpret in-depth the self-reported data.

The sample of the study can also bring some potential limitation for the study. The age distribution of the sample is older than expected, as around 60% of the respondents are older than 45 years. The respondents of the study have a relatively high education background, as more than half of the respondents at least hold a master's degree. The uneven distribution of respondents' age and education may be caused by the length of the questionnaire and voluntary nature of the study, that respondents who participate in the study may be interested in the research topic. This limitation leads to a consequence that the research results maybe not generalize to a younger group, as the young group who has grown up with the development of communication technology may have very different views and Facebook usages from the sample group. Another potential issue relevant to sampling is caused by the voluntary nature of recruiting research participants. As discussed in the *Ethical Considerations* section, the research that recruits voluntary respondents is always affected by a "bias", because there are differences between people who are willing to participate in the research and people who are not. Thus, it should be noticed that the findings of the present study cannot be generalized to the non-volunteer population.

There is a flaw in the process of recruiting respondents. There are some minor differences, mainly in grammar, between the pilot test's questionnaire and the public one. However, the influence of those changes were not taken into consideration when collecting the respondents. The data from the pilot test and the public are mixed together and has been analysed together.

Chapter 4. Results and Statistical Analysis

In the first section of the chapter, the researcher initially presents the overall personality tendency of the respondents, along with a comparison with one personality study's result in an effort to understand whether the respondents can be representatives of general population.

Then there are six sections presenting quantitative findings of the result. The researcher has adopted several statistics approaches to examine the association or correlation between personality traits and Facebook usage, including factors of frequency, time spent, purposes, intimacy level, self-disclosure level, and preference of conflict management styles. The researcher has attached the statistics terminology in *Appendix 2*, which can be used as a supplement when reading the quantitative results part.

In the last section, the qualitative results are presented. The analysis of the qualitative data has not taken respondents' personality traits into consideration. Instead, it has been a supplement for the researcher to understand in-depth reasons for respondents' attitudes toward Facebook, and provided supplemental information for Facebook users' behavioural changes from face-to-face communication to Facebook communication.

Respondents' Personality Traits

The measure of personality traits is based on a five-point scale, which score ranges from 1 to 5. A score of 1 indicates an extremely low tendency to the trait, and a score of 5 indicates an extremely high tendency to the trait. Table 3 presents the mean scores of each personality trait of the respondents ($N_1 = 109$). As the table indicates, the research samples as a whole scored highest on the trait of *agreeableness* and *openness to experience,* relatively lower on *conscientiousness* and *extroversion*, and lowest on *neuroticism*.

Table 3 Descriptive statistics of the respondents' personality

	Minimum	Maximum	Mean	Std. Deviation
Extroversion	1.00	4.90	3.0431	.88101
Agreeableness	1.40	5.00	3.9899	.60888
Conscientiousness	1.80	4.90	3.4156	.71662
Neuroticism	1.00	5.00	2.9495	.80584
Openness	2.40	5.00	3.9523	.57632
(N_1= 109)				

If the present research's result is compared to a previous personality study carried out in 2006, presented in Table 4, with the same personality test and value scales (Donnellan et al., 2006, p. 194), but a larger amount of participants ($N_2 = 2,663$). Overall, the present research sample as a whole tends to be slightly more introverted, slightly more emotionally unstable and slightly more open to new experiences. However, the differences are subtle and statistically not significant.

Table 4 Descriptive Statistics for IPIP-FFM (50 Items)

(Source: Donnellan, Oswald, Baird, & Lucas, 2006, p. 194)

	Mean	Std. Deviation
Extroversion	3.36	.77
Agreeableness	4.00	.57
Conscientiousness	3.57	.61
Neuroticism	2.72	.73
Openness To Experience	3.63	.58
(N₂ = 2,663)		

Theme 1: Attitude toward Facebook

25% of the respondents (N_1=27) consider Facebook as a waste of time, and the rest of the respondents (75%, N_2=82) consider Facebook as a useful tool to communicate, socialize or acquire information. An independent *t*-test has been performed to compare personality traits differences between two groups.

Overall, the respondents' personality characteristics differ on the level of *neuroticism.* There are very subtle differences on the level of *extroversion*, *agreeableness*, *conscientiousness* and *openness*, but the differences are not statistically significant. Table 5 presents a comparison of personality traits between respondents with a negative or a positive attitude to Facebook.

Table 5 Personality mean scores of respondents with different attitudes to Facebook

	Users with a negative attitude to Facebook	Users with a positive attitude to Facebook
Extroversion	2.9259	3.0817
Agreeableness	3.9000	4.0195
Conscientiousness	3.4519	3.4037

20

Neuroticism	3.2185	2.8610
Openness To Experience	4.0074	3.9341
(Number of respondents)	*(N₂=27)*	*(N₃=82)*

The statistical analysis (the full independent *t*-test report can be found in *Appendix 6*) suggests:

1. Respondents in the group which has a negative attitude to Facebook have a higher score for *neuroticism* than the group which has a positive attitude to Facebook.
2. Two groups' respondents do not have significant differences on the level of *extroversion*, *agreeableness*, *conscientiousness*, and *openness*.

Theme 2: Frequency and Time Spent on Facebook

The respondents' frequency of visiting Facebook per day, time spending on Facebook per day, and frequency of updating Facebook have been examined. First of all, let us have a look at the overall answers from the respondents.

As Figure 1 shows, 17 respondents (16%) do not visit Facebook every day; 7 respondents (6%) reported once a day; 12 respondents (11%) visit twice a day; 11 respondents (11%) visit three times a day; and the rest, 62 respondents (57%), reported they visit Facebook more than three times a day;

Figure 1 Frequency of visiting Facebook
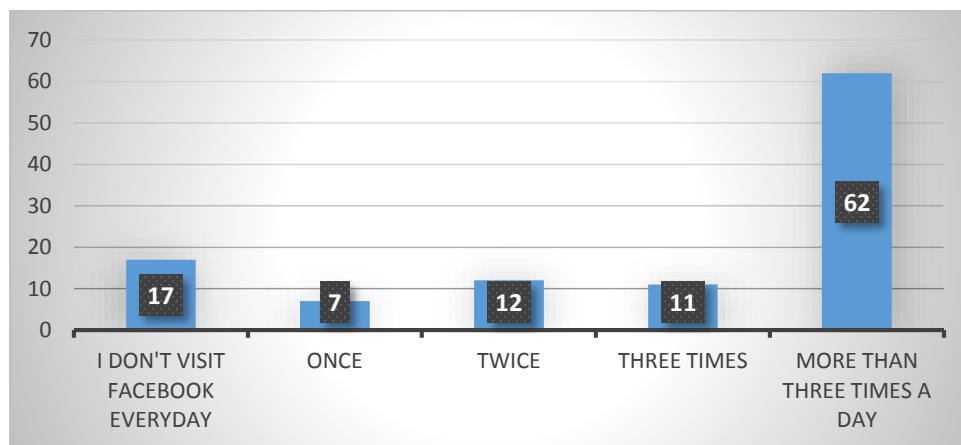
Figure 2 shows how many hours the respondents claimed they have spent on Facebook every day. 17 respondents (16%) has claimed they do not visit Facebook every day; 36% of respondents (N=39) spend less than one hour or one hour a day on Facebook; 29% of respondents (N=32) spend one to two hours a day; 19% of respondents (N=21) spend two hours or more than two hours a day.

21

Figure 2 Time spending on Facebook per day
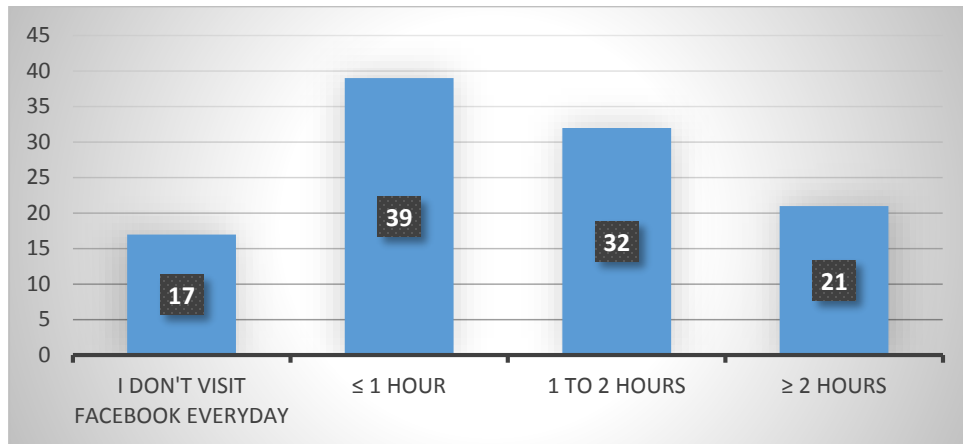
Figure 3 shows how frequently the respondents updated their Facebook status: 32% of the respondents ($N=35$) update their Facebook status on a yearly basis; 25% of respondents ($N=27$) update on a monthly basis; 19% ($N=21$) update on a weekly basis; 8% ($N=9$) on a daily basis; 8% ($N=9$) have claimed they update their Facebook status only once a month and the rest (8%, $N=8$) never update their Facebook status.

Figure 3 Frequency of updating Facebook status
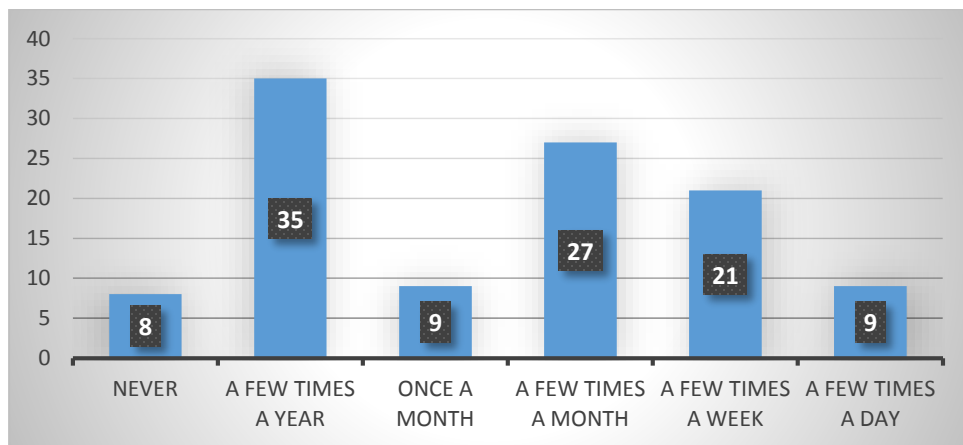
In order to find whether or not there are associations between an individual's big five personality traits and frequency of visiting, time spent on Facebook, and frequency of updating status, an ANOVA analysis has been performed. The result indicates (full test table can be found in *Appendix 8.1*):

1. Statistically, none of the three Facebook using frequency variables have found a statistically significant association with any of the five personality traits directly.

However, when the researcher takes account gender effect, the statistics test shows a new result:

2. The interaction between gender and hours spent on Facebook was found to have a statistically significant effect on the personality trait variable, *conscientiousness*.

Figure 4 shows that: according to gender, the *conscientiousness* level has a reversed effect to the hours spent on Facebook. The results have been summarized as following:

2.1. For male respondents, the *conscientiousness* level has a U-shape effect on hours spent on Facebook. In other words, male respondents who do not use Facebook every day and those who spend a long time on Facebook ever day have a relatively high level of *conscientiousness*; those who spend a moderate time on Facebook every day have a relatively low level of *conscientiousness*.

2.2. For female respondents, the exact opposite was observed for female respondents and this interaction was statistically significant. The *conscientiousness* level has a reverse-U-shape effect on hours spent on Facebook. In other words, female respondents who do not use Facebook every day and those who spend a long time on Facebook every day have a relatively low level of *conscientiousness*; those who spend a moderate time on Facebook have a relatively high level of *conscientiousness*.

*Figure 4 Interaction effect of gender and hours spent on Facebook on personality trait: Conscientiousness.*
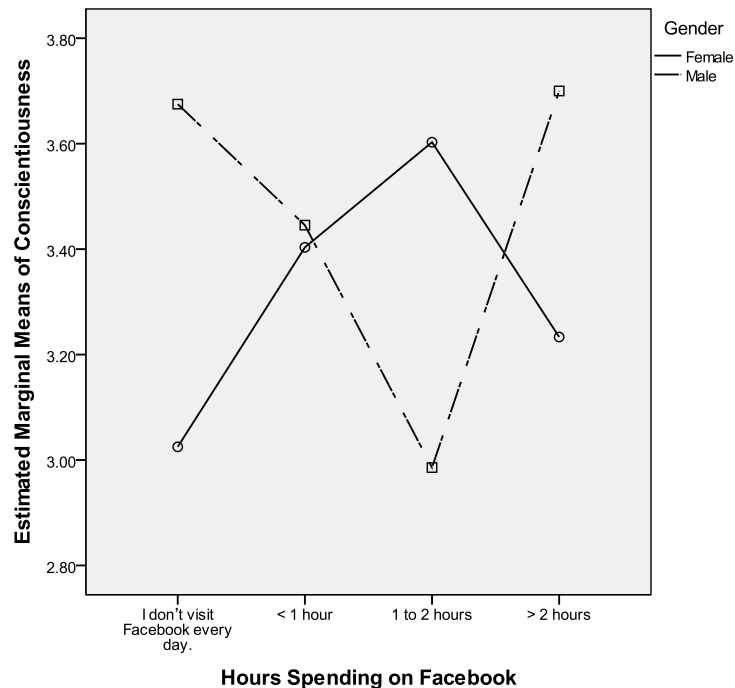
Theme 3: Purposes of Using Facebook

The research has examined the associations between an individual's personality traits and three purposes of using Facebook. The respondents were asked to which degree they use Facebook as a tool to meet new friends, learn more about people they have met already or do teamwork with classmates/colleagues. First of all, the researcher presents the overall answers from the respondents.

As Figure 5 presents: for most people, Facebook is not a platform for looking for a new friend. Among all respondents, only 17% agrees or slightly agrees they use Facebook to expand their social network while the rest (N_{agree}=7; $N_{slightly\ agree}$=11), 83%, slightly disagree or disagree ($N_{disagree}$=76; $N_{slightly\ disagree}$=15).

Figure 5 Purpose: use Facebook to meet new friends
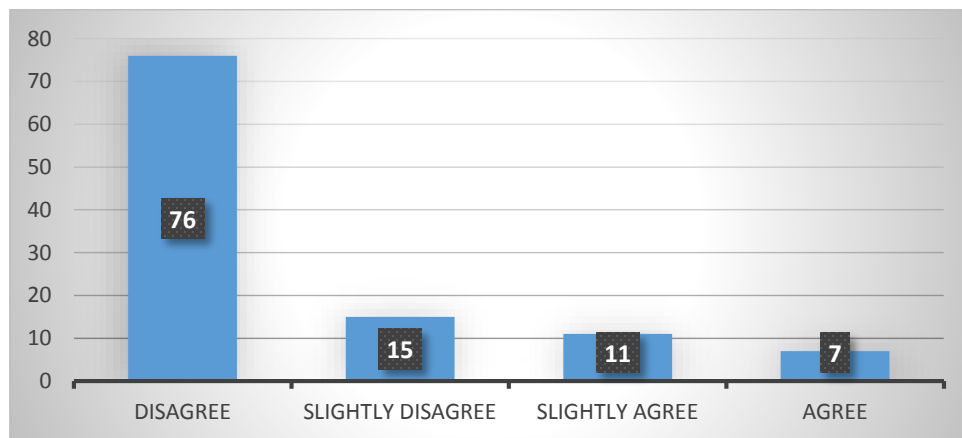
The result, presented in Figure 6, shows that Facebook is more considered as a tool to maintain one's existed social network. Seventy-two percent of respondents agree or slightly agree that they use Facebook to learn more about people they have met already, while only 28% disagree or slightly disagree.

Figure 6 Purpose: using Facebook to learn more about people one has already met
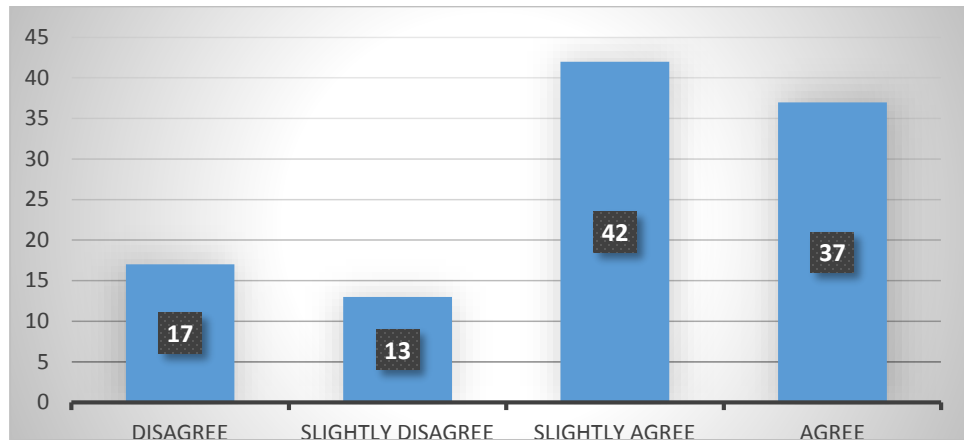
As results presented in Figure 7 show, among all the respondents, around 59% use Facebook to communicate with their teammates for the purpose of completing teamwork, while 41.28% disagree or slightly disagree that they use Facebook to do teamwork. Comparing with the results of the previous two statements, the present one does not show a very distinctive tendency of whether or not people use Facebook to do teamwork, as the amount of people who "slightly agree" and "disagree" with the statement are both very high.

Figure 7 Purpose: using Facebook to do teamwork
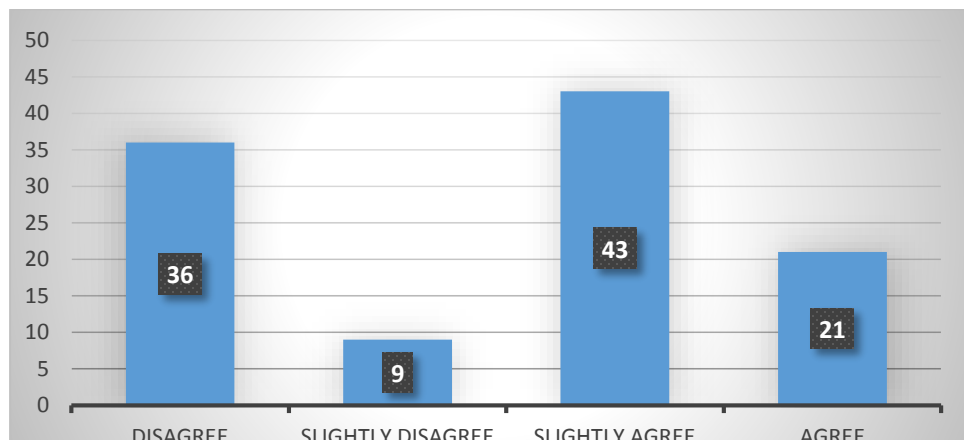
In order to understand whether or not the five personality traits are associated with the three purposes of using Facebook, an ANOVA test has been performed. The statistics results (the full statistics table can be found in *Appendix 8.2*) show that:

1. The five personality traits are not associated with the purpose of using Facebook to look for a new relationship.
2. The five personality traits are not associated with the purpose of using Facebook to maintain existing social networks.

3. The only statistically significant association found was between the personality trait *extroversion* and the tendency of using Facebook as a platform of teamwork communication.

Figure 8 explains how the trait *extroversion* statistically associates with responses on purposes of using Facebook. The figure indicates:

3.1 The higher the agreement that respondents use Facebook for purpose of teamwork with classmates or colleagues, the higher their *extroversion* score. This signified a positive association between *extroversion* and the purpose of using Facebook as a teamwork communication platform.

Figure 8 Means plot of Extroversion scores across response on purpose of using Facebook.
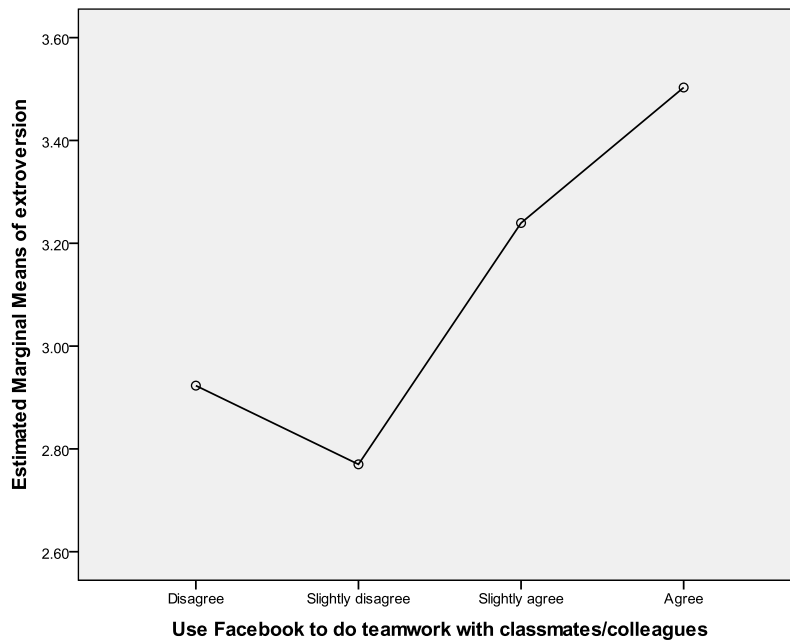
Theme 4: Intimacy Level

The respondents were asked to rate the intimacy level they feel when they communicate with their friends in offline environments and on Facebook. A paired-samples *t*-test (full statistics report can be found in *Appendix 7, Pair 1*) has been performed to determine whether there is a change caused by different communication mediations. The result shows:

1. On average, respondents reported that they experience a significantly higher level of intimacy through offline communication than Facebook communication.

26

From Figure 9 and 10, we can clearly see how intimate the respondents felt through offline communication and Facebook communication.
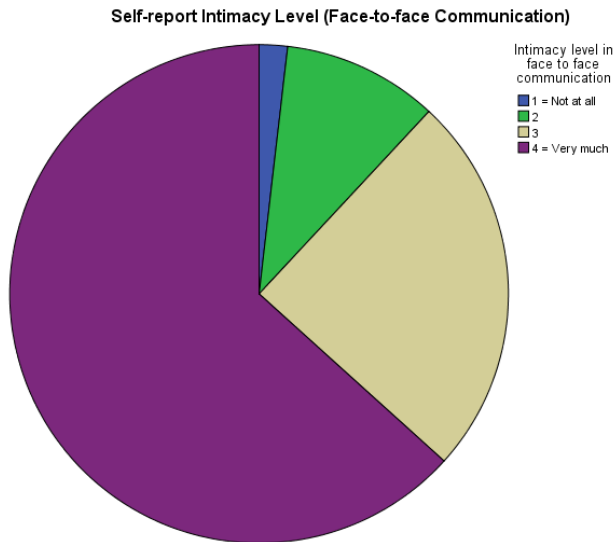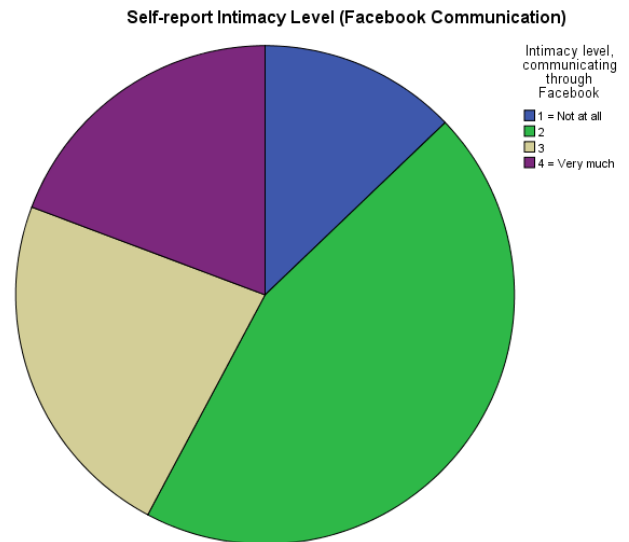
Self-report Intimacy Level (Face-to-face Communication)

Self-report Intimacy Level (Facebook Communication)

In order to further understand if personality traits are correlated to one's feeling of intimacy level when communicating in offline environments and on Facebook, two Pearson Correlation Tests (full statistics report can be found in *Appendix 9.1*) have been performed. It can be found that:

2. *Extroversion*, *agreeableness*, *conscientiousness* and *openness to experience* are significantly positively correlated to one's intimacy level in face-to-face communication.
3. *Neuroticism* is negatively correlated to one's intimacy level in face-to-face communication.

In the correlation test between personality traits and one's intimacy level in Facebook communication the results shows that:

4. Only the level of *conscientiousness* and *openness to experience* are significantly positively correlated to one's online intimacy level.

Comparing the two correlation results, it can be found that:

5. An individual's level of *extroversion*, *agreeableness* and *neuroticism* no longer influence her perception of intimacy with friends in online communication, only the level of *conscientiousness* and *openness to experience* matter.

27

At the same time, it should be noticed that the correlation degree between *conscientiousness* and intimacy is lower in online communication than in offline communication; the correlation degree between *openness to experience* and intimacy is higher in online communication than in offline communication.

Theme 5: Self-disclosure Level

The individuals' self-disclosure levels have been measured by two sub-factors in this research: one is emotional disclosure, and another one is the willingness to talk private topics.

In an effort to examine whether or not the respondents' self-disclosure levels have changed from face-to-face communication to Facebook communication, two paired-samples *t*-tests have been used to compare the means of respondents' self-disclosure level. The results show (detailed report can be found in *Appendix 7, Pair 2 & 3*) that:

1. Respondents reported that they are more likely to disclose their negative emotions in face-to-face situation than on Facebook.
2. Respondents reported that they are more likely to tell more private topics face-to-face than on Facebook.

Figure 12 presents the respondents' reported behavioural changes of negative emotion disclosure level from offline communication environment to Facebook. Figure 13 presents the respondents' reported changes of private topic disclosure level.

Figure 12 Comparison of negative emotion revealing level in offline communication and on Facebook
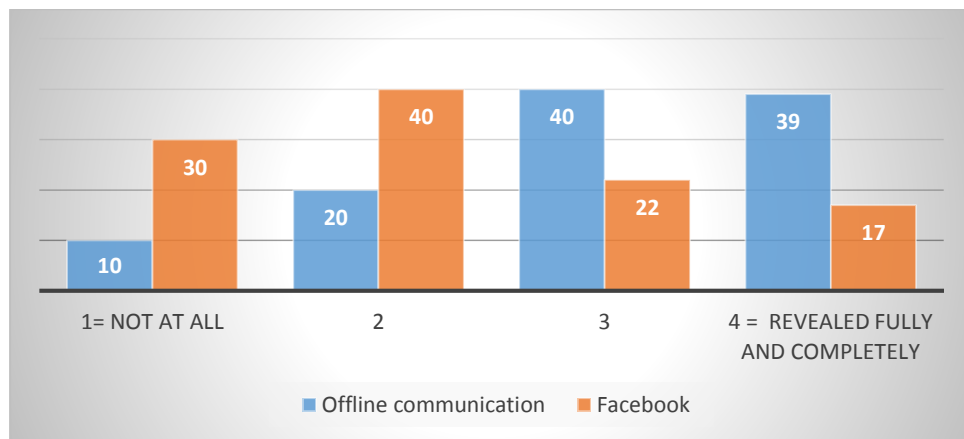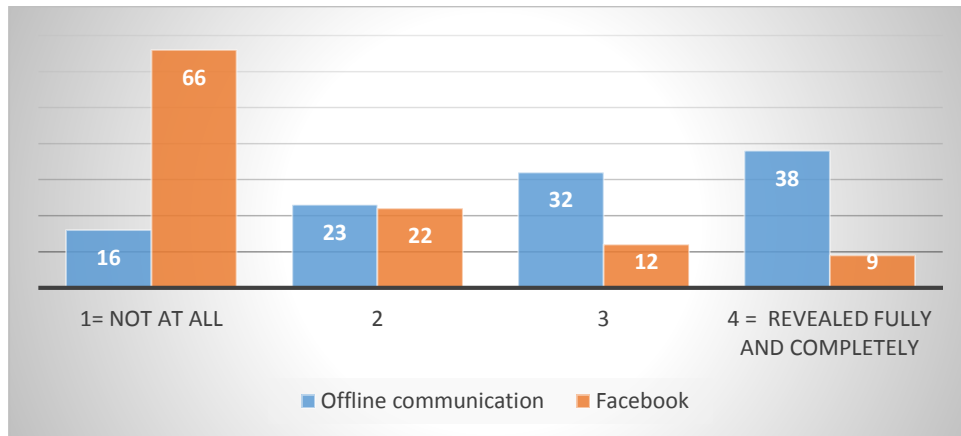
Figure 13 Comparison of private topic disclosure level in offline communication and on Facebook

Two Pearson Correlation Tests (full statistics report can be found in *Appendix 9.2*) have been performed to test the correlations between an individuals' five personality traits and self-disclosure level. The statistics results show that:

1. An individual's level of *agreeableness*, *conscientiousness* and *openness to experience* are positively related to the willingness to express negative emotions in face-to-face situations.
2. Only the level of *conscientiousness*, which is a decreased level of correlation, correlate with negative emotion expressing in Facebook communication.
3. An individual's willingness to talk about private topics are significantly correlated with her level of *extroversion* in face-to-face communication,
4. An individual's willingness to talk about private topics are significantly correlated with one's level of *neuroticism* and *openness to experience* in Facebook communication.

The results indicate that personality traits do associate with an individual's willingness to disclose negative emotions or private topics in Facebook and face-to-face communication. However, there are different determined personality trait(s) influencing people's tendency to disclose negative emotion or share private topics.

Theme 6: Conflict Resolution Styles

The respondents were asked to rate their tendency to choose each conflict resolution styles on a four-point scale: *Positive problem solving* (focusing on the problem at hand), conflict engagement (losing control and verbally attack another person), *withdrawal* (remaining silent for a long period), *compliance* (giving in and not defending yourself).

Four paired-samples *t*-tests have been used to examine whether the respondents' conflict resolution preferences have statistically significantly changed from offline to online

communication (detailed table can be found in *Appendix 7, Pair 3 to 7*). The results show that:

1. The respondents claimed they prefer to choose the *positive problem solving* strategy in Facebook communication rather than in face-to-face situations.
2. The respondents claimed they are more likely to choose the *conflict engagement* strategy in face-to-face situations rather than in Facebook communication. In another words, the respondents are easier to lose control and verbally attack the conflict encounter in face-to-face situations rather than in Facebook communication.
3. There is no significant difference showed on choosing *withdrawal* strategy neither on Facebook nor during face-to-face communication.
4. The respondents are more likely to choose the *compliance* strategy in face-to-face communication than on Facebook communication, which means that the respondents are more likely to give up solving the conflict and not defend herself in face-to-face communication than on Facebook communication.

After identified people have different tendencies of choosing conflict resolution strategies in both online and offline communication, the researcher has further performed two Pearson Correlation Tests (full statistics report can be found in *Appendix 9.3 & Appendix 9.4*) to examine the possible correlations between personality traits and preference of conflict resolution strategy.

The result suggests in face-to-face communication:

1. An individual's level of *agreeableness*, *conscientiousness* and *openness to experience* are positively correlated to choosing positive problem-solving strategy, and the level of *neuroticism* negatively related to the choosing of this strategy;
2. One's level of *agreeableness* is negatively related to choosing conflict engagement.
3. *Neuroticism* is positively and *openness to experience* negatively related to withdrawal strategy choosing;
4. *Extroversion*, *conscientiousness* and *openness to experience* are negatively related to preference of choosing compliance strategy.

However, when respondents encounter a conflict when communicating through Facebook, the researcher found that:

5. There are no significances in all correlation tests between personality traits and conflict resolution preferences.

The result can be an indication that when people encounter a conflict on Facebook, the choosing of conflict resolution styles are greatly influenced by other factors rather than one's own personality.

Qualitative Data of the Study

In this section, the researcher analysed respondents' open question answers, in order to understand respondents' own attitudes Facebook and their own observations of how people around them use Facebook.

Attitudes to Facebook

Forty-two out of 113 respondents commented about how they think about Facebook, and 15 people among those who answered the question said they do not have any comment on Facebook. Analysing the rest of the replies, not only the respondents' attitudes to Facebook, but also the reasons behind the attitude can be found.

Reasons for people who do not like Facebook are very similar, there are two words frequently repeated in respondents' answers, which are "addict" and "toxic". Information overload, especially unnecessary information overload, is one of the biggest reasons the respondents dislike the web service, as some respondents replied:

> *...some people is more addict to it than they know or think.*

> *I get upset and sometimes jealous at some things people post. It seems to cause unnecessary drama at times too.*

> *Its most negative aspect is that it's a way of "stalking" anyone whether you want it or not.*

From the respondents' answers, it also can be found that Facebook use associates with the increase of some negative emotions, as one of the respondents call Facebook an "innovation of loneliness". Several respondents mentioned that communicating though Facebook has less intimacy than communicating through phone or face-to-face:

> *Facebook does have connect people's lives. I do not believe they are real, though. Please stop depending on Facebook, pick up your phone to make a call or put on your coat to arrange a meeting.*

> *It serves a useful purpose but does not replace face-to-face.*

Privacy concern was another thing that worried the respondents, and led to the negative attitude to Facebook, as one of the respondents commented:

> *[Facebook is the] ... only one big company earns all the private information and make money.*

Among people who are in favour of Facebook, the most frequently mentioned reason is that Facebook provides a convenient way to communicate with people at a distance and keep in touch with old friends:

> *Facebook is a convenient tool for communicating with people and organizing things, even if there are other options for this, Facebook is better since almost everyone has it and is familiar with using it.*

> *I love Facebook for being able to keep loose tabs on friends and acquaintance I've had from childhood on. I appreciate seeing articles people post and what ideas are floating around. I love seeing pictures of my friends and their lives and families.*

Another reason people like Facebook is that the website is a quick resource to both spread and acquire information. Some of respondents mentioned that Facebook is a more convenient platform to get educational information:

> *I use it as a tool for getting access to articles and videos posted by various institutions. FB provides single-stop place to get such material from varied sources.*

> *I think it is a great education tool and communication medium.*

> *…I do not think it is worthless if your friends have good stuff. My friends filter news and cultural information so I enjoy reading what they have found about news or culture. I have enjoyed post in a group about NLP and learned a lot from the posts there. It is a high quality of discussion in that particular group.*

That Facebook provides the potential chance for people to meet people with similar needs or similar interests is another motivation of people using Facebook. As some of the respondents commented:

> *I think Facebook allows people who are in some way disadvantaged in the real world to group together and become quite powerful.*

> *I like Facebook, especially art and atheist groups.*

Similar to previous studies' results that Facebook can be a tool for some people to present themselves strategically, the present study also found managing self-impression, either personal self-presentation or professional image, is one of the motives for Facebook use:

> *I use FB as a tool to enhance my personal brand and to create trust for future customers of my professional training services.*

Facebook can provide some emotional support to a certain group of people:

It could bring more security for some people to write or to express themselves without many social barriers.

Respondents' Observations to Their Own Behavioural Changes

Seventy-eight respondents commented on their own behavioural changes from face-to-face communication to Facebook communication. Ten of them replied there is no difference at all. Among all three open questions, the researcher gets the most answers on this question. Summarizing from respondents' answers, the top repeated message is about the lack of intimacy and security on Facebook communication, and thus tend to disclose less information concerned with their emotion and private issues:

I do not reveal anything private on Facebook. I would never use it as a tool to discuss problems or share personal details or feelings. Facebook is more superficial connection outside private Facebook messaging, which is similar to email or online chatting. I would share feelings of amusement, bewilderment, happiness, excitement but not darker, sadder emotional states.

I feel more comfortable revealing personal information offline, especially face-to-face.

I reveal less about my experiences online.

I do not consider online communication is reliable and true as offline communication.

The research found that some of the respondents preferred Facebook as a communication channel, as they feel freer to express themselves:

I am able to express my thoughts and feelings better online than offline.

Consistent with previous study on effect of CMC, the respondents reported the same effect caused by lack of social context and immediate non-verbal feedback in CMC, and this effect lead to two different attitudes of replying, one is a more cautious attitude to reply messages on Facebook, another type is giving up to phrasing explanatory messages:

I have much more time to think about what people are saying, and consider my response online. I am generally much more careful about how I phrase things online because there is no body or facial language to help.

I have the luxury of spending more time composing replies online. I take much more care not to offend anyone, because it's harder to explain what you meant and they may not see a response for a long time.

I am more likely to keep defending my position in person. With social media, the likelihood of misinterpretation comes into play. Sometimes, it is easier to get your point across in person so that your vocal intonation and facial expressions come into play. Therefore, sometimes it is best to just 'let it go' rather than having to go through the extended, explanatory types of conversations are intended to make sure that the other person is not misinterpreting the meaning of your words.

Respondents' Observations to Others Behavioural Changes

Sixty respondents made remarks on observations to their friends' behavioural changes from face-to-face communication to Facebook communication. Of the 60 respondents, 13 respondents replied there is no difference found.

Overall, the respondents reported they had noticed their friends behave differently on Facebook compared to face-to-face communication. People in general behave on Facebook contradictory with their communication style in real life, as commented by the respondents:

The ones who are shy online are usually very outgoing offline.

Many of my friends say a lot more on Facebook than they would normally say when we meet. I am also so surprised to see that they use it so often.

Their personalities change.

Some friends are more active and more free in posting information on Facebook.

They sound like completely different people online vs offline.

Some of the respondents have more detailed observations and comments that in general people talk more on Facebook, however the topics are only concerned with the positive side of life, instead of private information:

I would say that people tends to post on Facebook positive things, curious things about life, interesting articles… but not real states of mind of how they really are.

Online communication is touching only the bright side of life.

I like the way most people have a soft side on Facebook and for example most of them like beautiful things like sunsets or flowers which they would not admit in person. I think people try to convince themselves that they are happy or OK by posting photos of themselves doing fun things on Facebook.

My real friends do not share real personal stuff on FB.

Anything really confidential will not be said on Facebook.

Similar to the answers to the other two questions, once again, many respondents mentioned their concern that Facebook is not "real". The respondents in general replied that they consider face-to-face communication as a more accountable communication method.

Chapter 5. Discussion

In this chapter, there are four sections in total: in the section *Discussion of Results*, the main research findings are presented, along with interpretations. Some conclusions are congruent with previous studies, but some are not. The academic and practical relevance are stated in the second section, *Implications*. Finally, according to the findings and the limitations of the present study, some suggestions for future studies are presented, which are presented in the section *Suggestions for Future Study*.

Discussion of Results

The aim of this study is to investigate whether personality traits are associated with Facebook's usage. For this purpose, a study was developed with consideration of five personality traits and the factors of Facebook usage, including attitudes to Facebook, frequency, time spent, the purposes of using Facebook, the intimacy level, self-disclosure level, and preference of conflict resolution styles. In the statistical analysis several techniques were used, such as ANOVA, paired-samples *t*-test, and Pearson Correlation Test. This analysis resulted in some interesting findings:

Theme 01: Personality and Attitudes towards Facebook

The study has attempted to examine personality differences in Facebook users and non-users, and in Facebook users' positive attitudes and negative attitudes toward Facebook. Due to a small sample size of Facebook non-users, which is four respondents in the research, only the results of Facebook users' attitudes are discussed here.

The statistics results shows that people with different attitudes toward Facebook significantly differ in the level of *neuroticism*. A negative attitude to Facebook (considering the service as a waste of time) is associated with a high level of *neuroticism*; the positive attitude to Facebook (considering the service as a useful tool to communicate) is associated with a low level of *neuroticism*.

According to FFM, individuals with a high level of *neuroticism* tend to be emotionally unstable, and easy to experience negative emotions. The high tendency on this trait is associated with problems of expressing oneself, and causes one's lack of a sense of belonging (Goldberg, 1990; John & Srivastava, 1999). Based upon social compensation theory, the emergence and flourish of SNS provides an anonymous environment for this group of people to freely communicate with people, without feeling the constraints that the external world puts on them, thus they have potential for looking for friends and expressing themselves on SNS in order to compensate their lack of belonging in real life. In this sense,

a high level of *neuroticism* should be associated with a positive attitude to Facebook, however, the study results is against the hypothesis.

If comparing the statistical results with the qualitative data, there are some traces that can be used for understanding the association between *neuroticism* and attitude to Facebook.

Summarising from the respondents' answers, it was found that people with the "shy" quality tend to be more talkative on Facebook. However, as most of people still feel insecurity communicating on Facebook, the conversation remains "superficial" and seldom involves private topics. The respondents' observations are verified by the statistical findings (explained later in Themes 04 and 05) that people do tend to talk less about private issues and feel less intimacy on Facebook communication. From respondents' qualitative answers, it was also found the use of Facebook is possibly associated with an increase of loneliness.

An inference can be drawn based upon the statistical and qualitative findings: an individual with a high level of *neuroticism* indeed has behaviours of looking for compensation through CMC, however, the compensation does not achieve this since, of the different outcomes between face-to-face communication and CMC, instead the CMC leads to an increase of loneliness because of the nature of CMC which in different degrees lacks social context and emotional involvement (Harman et al., 2005).

Theme 02: Frequency and Time Spent on Facebook

The study does not find correlations between one's personality traits and frequency of visiting Facebook or updating status. However, the statistical analysis revealed that there is an association between one's *conscientiousness* level and the hours spent on Facebook according to different genders. For male respondents, a U-shape association between *conscientiousness* level and time spent on Facebook can be noticed. It means that males who do not visit Facebook every day and who spend more than 2 hours a day have a higher level of *conscientiousness* than males who spend moderate time on Facebook. For female respondents, an inverted U-shape association was found, which indicates an exact opposite tendency of males.

The *conscientiousness* is an indication to one's self-discipline level. People with a high score on *conscientiousness* are likely to be dedicated in work performance. Thus, people with a high score on *conscientiousness* avoid using Facebook as it is a source of distraction. The study disagrees with the assumption by presenting two opposite associations, the U-shape and invert-U-shape.

The data of the present study does not have enough materials and evidences to explain why the associations are non-linear (U-shape and the invert U-shape) as well as why different

genders have different tendencies. It is recommended that future study designs a research to verify the associations, and understand reasons behind the two different tendencies.

Ross et al. (2009) concluded that there is no association between *conscientiousness* level and time spent on Facebook. The conclusion is true if we do not consider gender differences. *Conscientiousness* level and time spent on Facebook overall does not show any significant association, because male and female tendency compensates for each other. The present study seems to disagree the previous conclusion by taking gender effect into consideration.

Theme 03: Purposes of Using Facebook

Regarding the purposes of using Facebook, the statistical results revealed a positive association between *extroversion* and employing Facebook as a teamwork tool. Since the researcher did not find previous study on associations between personality and purpose of using Facebook. The further interpretation of this statistical result is based upon the researchers' inference.

Behind the association between the *extroversion* personality and using Facebook as a teamwork communication tool, there are two possible interpretations: first, using Facebook as a teamwork tool is possibly the cause of the extrovert personality. When a(n) organization/team employs a social network as one of the working mediums, there are more chances for the introverts to practice their socializing skills and thus increase their level of *extroversion*. Second interpretation possible is that the extrovert tends to choose careers that need to communicate both in face-to-face situation and on SNS. The statistical finding of the research can be an indication to this tendency of the extroverts' career choice. However it is noticeable that either interpretations need to be verified with further research design.

Theme 04: Intimacy Level with Friends

The research asked the respondents how intimate the respondents' feel, not only on Facebook communication, but also in face-to-face communication, in order to understand the dynamic association between personality traits and one's feeling of intimacy with friends. Overall, people feel less intimacy with Facebook communication.

The qualitative data of the research reinforced the conclusion as many respondents replied that they considered face-to-face communication is more "real". Also, many respondents were concerned with misunderstanding on Facebook communication, thus they need to be very careful with their phrases. This can be one of reasons why people feel less intimacy with Facebook communication.

The statistical results reveal correlations between personality traits and intimacy level: in face-to-face communication, all the five personality traits are correlated with how intimate

one feels with friends. However, when Facebook is the communication medium, only the level of *conscientiousness* and the level of *openness* are statistically significantly correlated with how intimate one feels.

The changes in correlated factors of intimacy level in face-to-face communication and in Facebook communication can be an indication of effect of the communication medium.

To interpret the positive associations between *conscientiousness* and intimacy level on Facebook communication, a tentative remark can be made as following: one of the reasons people feel that Facebook communication is somewhat artificial, as mentioned above, can be that in order to avoid misinterpretation, people need to be more careful with phrasing than in face-to-face communication. The more incongruent one behaves in face-to-face communication and in Facebook communication, the more unrealistic one feels. As people who have a high score on *conscientiousness* are likely to be careful with their own words, there are less differences between face-to-face communication and computer-mediated communication for people who had a high tendency on *conscientiousness*.

Amichai-Hamburger and Vinitzky (2010) suggest that people with high scores on *openness* tend to be more familiar with different features of Facebook due to their curious nature and willingness to try new things. It seems that this explanation can count for the present research findings on the positive correlation between *openness* and intimacy level on Facebook communication. However, due to not enough evidence, this interpretation still needs to be verified by future studies.

Theme 05: Self-disclosure Level

Similar to Theme 04, the researcher asked the respondents to rate their level of disclosing negative emotions and private topics in face-to-face communication and in Facebook communication. The statistical results showed that people tend to reveal more negative emotions and talk about more private issues in face-to-face communication than on Facebook.

As observed by respondents themselves, though there is a tendency that many people tend to talk more on Facebook, the conversations remain to be only about the "bright" side of life or is very vague, negative-emotion revealing. This observation is consistent with the research finding.

According to the statistical analysis, in face-to-face communication, one's level of *agreeableness, conscientiousness* and *openness* are positively related to the level of negative-emotion revealing. In Facebook communication, only the level of *conscientiousness* is statistically positively correlated with the level of negative emotion disclosing.

In face-to-face communication, one's level of *extroversion* is statistically positively correlated with the willingness to talk about private issues, however on Facebook communication, the level of *neuroticism* and *openness* are statistically positively correlated with the disclosing level of private issues.

As social compensation theory points out, the reason behind the correlation between *neuroticism* and private topic disclosing can be the sensitive people's (a high level of *neuroticism*) tendency to look for compensation in online communication. The anonymous nature of CMC provides the emotionally sensitive people a platform to express themselves. The reason behind the correlation between *openness* and disclosing of private issues may be a similar reason as mentioned in Theme 04 that people with a high *openness* tendency are willing to communicate in different forms. However, the inference needs to be verified in future study.

Theme 06: Conflict Resolution Styles

Comparing the respondents' preferences of conflict resolution styles in face-to-face communication and in Facebook communication, it was found that in Facebook communication, people tend to face problems directly and focus more on solving problems; while in face-to-face communication, people tend to avoid conflict and overreact to a conflict situation.

The difference in the preference of conflict resolution styles between face-to-face communication and Facebook communication once more reinforced the conclusion that communication medium has a significant influence on one's communicative behaviours. One of the reasons that people prefer to choose a positive conflict resolution style on CMC is that when communicating through computer, the two persons/parties of the conflict cannot see the non-verbal messages from the other person/party. In this way, the two sides can both focus more on the verbal message and facts of the conflict. Another reason possible is that CMC can be both synchronous and asynchronous. In other words, Facebook communication does not require an immediate response, which provides an opportunity for reconsidering the conflict.

The researcher tested the correlations between personality traits and the preference of conflict resolution styles in face-to-face communication and in Facebook communication. It was found that in face-to-face communication, an individual's level of *agreeableness*, *conscientiousness*, *openness*, and *neuroticism* are correlated with choosing positive problem solving; *agreeableness* is correlated with conflict engagement; *neuroticism* and *openness* are related to conflict withdrawal; *extroversion*, *conscientiousness* and *openness* are correlated to conflict compliance. The findings indicated that in face-to-face communication, one's personality traits are significantly related to conflict resolution style preference. However, the statistical analysis showed that there is no statistical significance

in all personality traits and all conflict resolution styles, which indicates that the preference of conflict resolution styles is affected by other motives rather than one's own personality traits.

Although the researcher did not find a significant association between personality and conflict resolution style preference on Facebook communication, this set of statistical correlation tests on personality and conflict resolution styles in two communication mediums has an important meaning for CMC studies, as it provides a significant example of how communication medium affects human communication behaviours.

Implications

Firstly, as mentioned in *Discussion of Results*, the present study uncovers some associations which previous researchers have neglected. In this sense, the research has expanded our understanding in the topic.

Secondly, the research found significant changes from face-to-face communication to Facebook communication. The significant changes can be seen in the respondents' feeling of intimacy, self-disclosure level, and the preference of conflict resolution styles. The changes may indicate that the communication medium affects human relations. So, the study provides more material for scholars to understand the role and impact of the communication medium, as well as the difference between face-to-face communication and CMC.

Thirdly, for users and designers of communication technology, it is suggested to take the communicative affordances of the medium into consideration. The design of communication services should not be only based on studies of human communication in one setting or circumstance. Communication patterns are likely substantially different with different media or means for communication, e.g. as suggested in this research, between face-to-face communication and Facebook communication where different personality traits can be associated with Facebook usage and communicative behaviours.

Fourthly, the study reveals a feeling of insecurity when people communicate on Facebook. It is reasonable to assume that this feeling of insecurity may also exist when people communicate through other SNSs. For the purpose of improving user experience or developing the communication technology, it is important for SNS providers to understand the in-depth reason behind such feelings of insecurity and take the underlying factors into consideration.

Suggestions for Future Study

In the section *Discussion of Results*, the researcher has already suggested some ideas for future study. The present study has found the existence of some associations between personality traits and Facebook usage. It is suggested to design research to verify the findings and explore in-depth reasons behind the associations.

As mentioned in the *Limitation* section, the sample group and the self-rating report research method could affect the accuracy of the results, thus it is suggested for future study adopting a direct observation to a more diverse sample group, in order to verify the research results of the study.

Chapter 6. Conclusion

The research investigated the associations between personality traits and Facebook usage. The personality has been measured by the Five Factor Model; Facebook usage has been studied from several aspects, including frequency of visiting and posting, time spent using Facebook, one's feeling of intimacy with friends, self-disclosure level on Facebook, and preferred conflict resolution styles on Facebook communication.

The research question has formulated as "*How do personality traits associate with an individual's use of Facebook?*"

A quantitative self-report was used to collect data. The results show there are some associations between personality and Facebook usage. The researcher also compared respondents' differences in intimacy level, self-disclosure level and preferred conflict resolution styles between face-to-face communication and Facebook communication. The comparison results provide more evidence on how communication medium affects the process of communication.

The research has answered the research question. The findings are concluded in the following:

1) An individual's attitude toward Facebook is associated with her level of *neuroticism*: positive attitude is associated with the low level of *neuroticism* and negative attitude is associated with the high level of *neuroticism*.
2) There are associations between one's *conscientiousness* level and the hours spent on Facebook according to different genders: U-shape association for males; reverse- U-shape association for females.
3) There is a positive association between *extroversion* and employing Facebook as a teamwork tool.
4) *Conscientiousness* and *openness* are positively correlated with the intimacy level an individual feels when communicating with friends on Facebook.
5) *Conscientiousness* is positively correlated with an individual's tendency of revealing negative emotion through Facebook communication.
6) *Neuroticism* and *openness* are positively correlated with talking about private issues through Facebook communication.
7) Personality traits are not associated with an individual's conflict resolution style on Facebook communication.

References

Amichai-Hamburger, Y., & Vinitzky, G. (2010). Social Network Use and Personality. *Computers in Human Behavior, 26*(6), 1289-1295.

Anolli, L., Villani, D., & Riva, G. (2005). Personality of People Using Chat: An Online Research. *Cyberpsychology and Behavior, 8*, 89-95.

Archer, J. L. (1980). Self-disclosure. In D. Wegner & R. Vallacher (Eds.), *The Self in Social Psychology* (pp. 183-204). London: Oxford University Press.

Bargh, J. A. (2002). Beyond Simple Truth: The Human-interest Interaction. *The Society for the Psychological Study of Social Issues, 58*, 1-8.

Bargh, J. A., & McKenna, K. Y. A. (2004). The Internet and Social Life. *Annual Review of Psychology, 55*(1), 573-590. doi: 10.1146/annurev.psych.55.090902.141922

Block, J. (1995). A Contrarian View of the Five-factor Approach to Personality Description. *Psychological Bulletin, 117*(2), 187-215. doi: 10.1037/0033-2909.117.2.187

Bordia, P. (1997). Face-to-Face versus Computer-Mediated Communication a Synthesis of the Experimental Literature. *Journal of Business Communication, 34*(1), 99-120.

Bowen, G. A. (2006). Grounded Theory and Sensitizing Concepts. *International Journal of Qualitative Research, 5*(3).

Boyd, D. M., & Ellison, N. B. (2007). Social Network Sites: Definition, History, and Scholarship. *Journal of Computer-Mediated Communication, 13*(1), 210-230. doi: 10.1111/j.1083-6101.2007.00393.x

Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO PI-R) and NEO Five-Factor Inventory (NEO-FFI) Professional Manual*. Odessa, FL: Psychological Assessment Resources.

Creswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, Calif: Sage.

DeAndrea, D. C., Shaw, A. S., & Levine, T. R. (2010). Online Language: The role of culture in self-expression and self-construal on Facebook. *Journal of Language and Social Psychology, 29*(4), 425-442.

Donnellan, M. B., Oswald, F. L., Baird, B. M., & Lucas, R. E. (2006). The Mini-IPIP Scales: Tiny-Yet-Effective Measures of the Big Five Factors of Personality. *Psychological assessment, 18*(2), 192-203. doi: 10.1037/1040-3590.18.2.192

Eysenck, H. J. (1992). Four Ways Five Factors Are Not Basic. *Personality and Individual Differences, 13*(8), 667-673. doi: http://dx.doi.org/10.1016/0191-8869(92)90237-J

Feist, J., & Feist, G. J. (2009). *Theories of Personality* (7th ed.): McGraw-Hill Education.

Ferriter, M. (1993). Computer Aided Interviewing and the Psychiatric Social History. *Social Work and Social Sciences Review, 4*, 255-263.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics: and sex and drugs and rock 'n' roll*. London; Los Angeles: Sage.

Gajjala, R. (2007). Shifting Frames: Race, ethnicity, and intercultural communication in online social networking and virtual work. *The role of communication in business transactions and relationships*, 257-276.

Galston, W. A. (2001). Political knowledge, political engagement, and civic education. *Annual review of political science, 4*(1), 217-234.

Goldberg, L. R. (1990). An alternative "description of personality": the big-five factor structure. *J Pers Soc Psychol, 59*(6), 1216-1229.

Goldberg, L. R. (1992). The Development of Markers for the Big-Five Factor Structure. *Psychological assessment, 4*(1), 26-42. doi: 10.1037/1040-3590.4.1.26

Goldberg, L. R. (1993). The Structure of Phenotypic Personality Traits. *The American Psychologist, 48*(1), 26-34. doi: 10.1037/0003-066X.48.1.26

Harman, J., Hansen, C., Cochran, M., & Lindsey, C. (2005). Liar, Liar: Internet Faking But Not Frequency of Use Effects Social Skills, Self-esteem, Social Anxiety, and Aggression. *CyberPsychology, 8*(1), 1-6.

Herring, S. (2001). Computer-Mediated Disclosure. In D. Schiffrin, D. Tannen & H. Hamilton (Eds.), *The Handbook of Disclosure Analysis* (pp. 612-634). Oxford: Blackwell Publishers.

Herring, S. (2007). A Facated Classification Scheme for Computer-Mediated Discourse. *Language@ Internet, 4*(1), 1-37.

Holzner, S. (2008). *Facebook Marketing: Leverage Social Media to Grow Your Business*: Pearson Education.

John, O. P., & Srivastava, S. (1999). The Big-Five Trait Taxonomy: History, Measurement, and Theoretical Perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102-139). New York: Guilford Press.

Jonassen, D. H., & Kwon, H. (2001). Communication Patterns in Computer-Mediated Versus Face-to-face Group Problem Solving. *Educational Technology Research and Development, 49*(1), 35-51.

Judge, T. A., & Bono, J. E. (2000). Five-Factor Model of Personality and Transformational Leadership. *Journal of Applied Psychology, 85*(5), 751-765. doi: 10.1037/0021-9010.85.5.751

Judge, T. A., Heller, D., & Mount, M. K. (2002). Five-Factor Model of Personality and Job Satisfaction: A Meta-Analysis. *Journal of Applied Psychology, 87*(3), 530-541. doi: 10.1037//0021-9010.873.3.530

Kalat, J. (2010). *Introduction to Psychology* (9 ed.): Cengage Learning.

Krämer, N. C., & Winter, S. (2008). Impression Management 2.0: The Relationship of Self-esteem, Extraversion, Self-efficacy, and Self-presentation Within Social Networking Sites. *Journal of Media Psychology: Theories, Methods, and Applications, 20*(3), 106.

Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V., & Crawford, A. (2002). Internet Paradox Revisited. *Journal of social issues, 58*(1), 49-74.

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukophadhyay, T., & Scherlis, W. (1998). Internet Paradox: A social technology that reduces social involvement and psychological well-being? *American psychologist, 53*(9), 1017.

Kurdek, L. A. (1994). Conflict Resolution Styles in Gay, Lesbian, Heterosexual Nonparent, and Heterosexual Parent Couples. *Journal of Marriage and Family, 56*(3), 705-722.

Kwan, G. C. E., & Skoric, M. M. (2013). Facebook Bullying: An Extension of Battles in School. *Computers in Human Behavior, 29*(1), 16-25. doi: http://dx.doi.org/10.1016/j.chb.2012.07.014

Lee, E. B. (2012). Young, black, and connected: Facebook usage among African American college students. *J Black Stud, 43*(3), 336-354.

Li, P. E. I., Xing, K. A. I., Wang, D., Zhang, X. I. N., & Wang, H. U. I. (2013). Information Diffusion In Facebook-Like Social Networks Under Information Overload. *International Journal of Modern Physics C, 24*(7). doi: 10.1142/S0129183113500472

Lim, B.-C., & Ployhart, R. E. (2004). Transformational Leadership: Relations to the Five-Factor Model and Team Performance in Typical and Maximum Contexts. *Journal of Applied Psychology, 89*(4), 610-621. doi: 10.1037/0021-9010.89.4.610

Lodhi, P. H., Deo, S., & Belhekar, V. M. (2002). The Five-Factor Model of Personality in Indian Context: Measurement and Correlates. In R. R. McCrae & J. Allik (Eds.), *The Five-Factor Model of Personality across Cultures* (pp. 227-248). New York: Kluwer Academic Publisher.

Lonnqvist, J.-E., Itkonen, J. V. A., Verkasalo, M., & Poutvaara, P. (2014). The Five-Factor Model of personality and Degree and Transitivity of Facebook social networks. *Journal of Research in Personality, 50*, 98. doi: 10.1016/j.jrp.2014.03.009

Mazer, J. P., Murphy, R. E., & Simonds, C. J. (2007). I'll see you on "Facebook": The effects of computer-mediated teacher self-disclosure on student motivation, affective learning, and classroom climate. *Communication Education, 56*(1), 1-17.

McCrae, R. R., & John, O. P. (1992). An Introduction to the Five-Factor Model and Its Applications. *Journal of Personality, 60*(2), 175-215. doi: 10.1111/j.1467-6494.1992.tb00970.x

Milgram, S. (1967). The Small World Problem. *Psychology Today, 2*, 60-67.

Norris, C. J., Larsen, J. T., & Cacioppo, J. T. (2007). Neuroticism is Associated with Larger and More Prolonged Electrodermal Responses to Emotionally Evocative Pictures. *Psychophysiology, 44*(5), 823-826. doi: 10.1111/j.1469-8986.2007.00551.x

Reingold, H. (1993). *The Virtual Community*. New York: Addison-Wesley.

Roblyer, M. D., McDaniel, M., Webb, M., Herman, J., & Witty, J. V. (2010). Findings on Facebook in Higher Education: A comparison of College Faculty and Student Uses

and Perceptions of Social Networking Sites. *The Internet and Higher Education, 13*(3), 134-140. doi: http://dx.doi.org/10.1016/j.iheduc.2010.03.002

Ross, C., Orr, E. S., Sisic, M., Arseneault, J. M., Simmering, M. G., & Orr, R. R. (2009). Personality and Motivations Associated with Facebook Use. *Computers in Human Behavior, 25*(2), 578-586. doi: http://dx.doi.org/10.1016/j.chb.2008.12.024

Rothmann, S., & Coetzer, E. P. (2003). The Big Five Personality Dimensions and Job Performance. *SA Journal of Industrial Psychology, 29*(1).

Shiu, H., Fong, J., & Lam, J. (2010). Facebook – Education with Social Networking Websites for Teaching and Learning. In P. Tsang, S. S. Cheung, V. K. Lee & R. Huang (Eds.), *Hybrid Learning* (Vol. 6248, pp. 59-70): Springer Berlin Heidelberg.

Simon, A. F. (2006). Computer-Mediated Communication: Task Performance and Satisfaction. *The Journal of social psychology, 146*(3), 349-379.

Straus, S. G. (1996). Getting a Clue: The Effects of Communication Media and Information Distribution on Participation and Performance in Computer-Mediated and Face-to-face Groups. *Small Group Research, 27*(1), 115-142.

Treadwell, D. (2011). *Introducing Communication Research: Paths of Inquiry*. Thousand Oaks, Calif: Sage Publications.

Trull, T. J., & Geary, D. C. (1997). Comparison of the Big-Five Factor Structure Across Samples of Chinese and American Adults. *Journal of Personality Assessment, 69*(2), 324-341. doi: 10.1207/s15327752jpa6902_6

Walther, J. B. (2011). Theories of Computer-mediated Communication and Interpersonal Relations. In M. L. Knapp & J. A. Daly (Eds.), *The SAGE Handbook of Interpersonal Communication* (4 ed., pp. 443-479): SAGE publications, Inc.

Zuckerberg, M., Hughes, C., Moskovitz, D., & Saverin, E. (2010). Facebook Statistics: Retrieved February.

Appendices

Appendix 1: Acronyms

ANOVA	The analysis of variance
CMC	Computer Mediated Communication
FFM	Five Factors Model
SNS	Social Network Service
SPSS	Statistical Product and Service Solutions
NEO-PI-R	Revised NEO Personality Inventory
IPIP	International Personality Item Pool

Appendix 2: Statistical Terminology

df   Degree of freedom

F   F-ration used in ANOVA statistics test

N   The sample size

P   Probability or the significance of the test, also write as *p* or *p*-value

r   Effect size

Appendix 3: Invitation Letter

Hello everyone~~

I don't know how many of you are interested in psychology and communication. I need your help with my dissertation. I would like to invite anyone who interested to give a portion of her time to complete a questionnaire.

The research is about the role of personality in communication behaviors of using Facebook.

All responses will be kept anonymously and only used for research purpose. The questionnaire will take approximately 25 - 35 minutes to complete. At the end of the survey, you can get a evaluation of your personality traits (based on big five personality test), it's more than welcome to share the questionnaire with your friends!!

Here is the link: http://www.learnthem.com/facebook&personality

Personality Traits and Facebook Communication Behaviors[2]

The questionnaire was published at the following link:

http://learnthem.com/Facebook&Personality

Introduction

The research aims to see how personality traits are correlated to attitude and communication behavior of using Facebook. The following questionnaire contains three parts:

1) Part I: Demographic information includes your gender, culture experiences, and education/occupation background;

2) Part II: A personality test, which adopts the Five-factor Model of Personality;

3) Part III: The usage of Facebook, including the frequency, attitudes and behaviors of using Facebook.

At the end of the survey, you will get your personality test result. Please notice, the assessment can only provide an approximate result to one's personality. Psychological advice can be given only by a certified practitioner.

Your responses will be kept anonymously and only used for research purpose.

PART I BACKGROUND

[Q1-1] What's your gender? *

Please choose only one of the following:

- ○Male

- ○Female

[Q1-2]What's your age? *

_____

[2] The symbol "*" indicates a mandatory question.

Please choose only one of the following:

- ○Less than 18

- ○18-24 years old

- ○25-34 years old

- ○35-44 years old

- ○45-54 years old

- ○55-64 years old

- ○65-74 years old

- ○75 years or older

[Q1-3]In which country were you born? * _____

[Q1-4]In which country do you currently live? * _____

[Q1-5]In which country did you spend most of your youth? * _____

[Q1-6]Which number represents the degree to which you follow the traditional culture values of your ethnic background? (1 = Not at all; 5=Always) *

Please choose only one of the following:

- ○1

- ○2

- ○3

- ○4

- ○5

[Q1-7]What is your education level? *

Please choose only one of the following:

- ○Lower than high school

- ○High school

- ○Some vocational/technical training without a degree

- ○Bachelor's degree or undertaking a bachelor degree

- ○Master's degree or undertaking a master degree

- ○PhD or undertaking a PhD degree

- ○Other

[Q1-8]Do you have a full-time job? *

Please choose only one of the following:

- ○Yes

- ○No

PART II PERSONALITY TEST

The personality test derives from Five Factor Model (or Big Five Personality Traits) theory. At the end of the questionnaire, you will get results of this personality test. Please notice, the test result can only give you a rough idea on your personality traits. Psychological suggestions can be given by certificated practitioner only.

Please rate on how much do you think the statements describe you on the scale of (1) disagree, (2) slightly disagree, (3) neutral, (4) slightly agree, and (5) agree. *

Please choose the appropriate response for each item:

	Disagree	Slightly disagree	Neutral	Slightly agree	Agree
I am the life of the party.	○	○	○	○	○
I am always prepared.	○	○	○	○	○

I get stressed out easily.	○	○	○	○	○
I have a rich vocabulary.	○	○	○	○	○
I am interested in people.	○	○	○	○	○
I feel comfortable around people.	○	○	○	○	○
I pay attention to details.	○	○	○	○	○
I worry about things.	○	○	○	○	○
I have a vivid imagination.	○	○	○	○	○
I sympathize with others' feelings.	○	○	○	○	○
I start conversations.	○	○	○	○	○
I get chores done right away.	○	○	○	○	○
I am easily disturbed.	○	○	○	○	○
I have excellent ideas.	○	○	○	○	○
I have a soft heart.	○	○	○	○	○
I talk to a lot of different people at parties.	○	○	○	○	○
I like order.	○	○	○	○	○

I change my mood a lot.	○	○	○	○	○
I am quick to understand things.	○	○	○	○	○
I take time out for others.	○	○	○	○	○
I don't mind being the center of attention.	○	○	○	○	○
I follow a schedule.	○	○	○	○	○
I get irritated easily.	○	○	○	○	○
I spend time reflecting on things.	○	○	○	○	○
I make people feel at ease.	○	○	○	○	○

I feel little concern for others.	○	○	○	○	○
I don't talk a lot.	○	○	○	○	○
I leave my belongings around.	○	○	○	○	○
I am relaxed most of the time.	○	○	○	○	○

I have difficulty understanding abstract ideas.	○	○	○	○	○
I insult people.	○	○	○	○	○
I keep in the background.	○	○	○	○	○
I make a mess of things.	○	○	○	○	○
I seldom feel blue.	○	○	○	○	○
I am not interested in abstract ideas.	○	○	○	○	○
I am not interested in other people's problems.	○	○	○	○	○
I have little to say.	○	○	○	○	○
I often forget to put things back in their proper place.	○	○	○	○	○
I get upset easily.	○	○	○	○	○
I do not have a good imagination.	○	○	○	○	○

I am not really interested in others.	○	○	○	○	○
I don't like to draw attention to myself.	○	○	○	○	○
I shirk my duties.	○	○	○	○	○
I have frequent mood swings.	○	○	○	○	○
I use difficult words.	○	○	○	○	○
I feel others' emotions.	○	○	○	○	○
I am quiet around strangers.	○	○	○	○	○
I am exacting in my work.	○	○	○	○	○
I often feel blue.	○	○	○	○	○
I am full of ideas.	○	○	○	○	○

PART III FACEBOOK USAGE

[Q3-1]Do you have a Facebook account? *

Please choose only one of the following:

- ◯Yes
- ◯No

[Q3-1-N1]Please indicates how frequently you use following communication methods: *

Only answer this question if the following conditions are met: answer was "no" at question Q3-1 (Do you have a Facebook account?)

Please choose the appropriate response for each item:

	Never	Several times a year	Several times a month	Several times a week	Everyday
Face-to-Face communication	◯	◯	◯	◯	◯
Video call	◯	◯	◯	◯	◯
Phone call	◯	◯	◯	◯	◯
Cellphone message	◯	◯	◯	◯	◯
Email	◯	◯	◯	◯	◯
Handwriting letter	◯	◯	◯	◯	◯
Blog	◯	◯	◯	◯	◯

Other social network websites (Google +, MySpace etc)	○	○	○	○	○

[Q3-1-N2]Please indicate how much you prefer to use following communication methods: *

Only answer this question if the following conditions are met: answer was "no" at question Q3-1 (Do you have a Facebook account?)

Please choose the appropriate response for each item:

	1 = Not at all	2	3	4 = Very much
Face-to-Face communication	○	○	○	○
Video call	○	○	○	○
Phone call	○	○	○	○
Message	○	○	○	○
Email	○	○	○	○
Handwriting letter	○	○	○	○
Blog	○	○	○	○
Other social network websites, such as MySpace, Google+ etc	○	○	○	○

[Q3-1-N3]Can you tell me why you don't want to have a Facebook account?

Only answer this question if the following conditions are met: answer was "no" at question Q3-1 (Do you have a Facebook account?)

Please write your answer here:_____

[Q3-2] Approximately, how often do you visit Facebook every day? *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose only one of the following:

- ○ I don't visit Facebook every day.

- ○ Once

- ○ Twice

- ○ Three times

- ○ More than three times a day

[Q3-3] Approximately, how many hours do you spend on Facebook every day? *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose only one of the following:

- ○ I don't visit Facebook every day.

- ○ ≤ 1 hour

- ○ 1 to 2 hours

- ○ ≥ 2 hours

[Q3-4] Approximately, how often do you update you Facebook status (include update pictures and share other's posts)? *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose only one of the following:

- ○Never
- ○A few times a year
- ○Once a month
- ○A few times a month
- ○A few times a week
- ○A few times a day

[Q3-5] How often do you use Facebook Messenger? *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose only one of the following:

- ○Never
- ○Once or a few times a year
- ○Once or a few times a month
- ○Once or a few times a week
- ○Once or a few times a day

[Q3-6] Please indicate the extent to which you agree the following statements: *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose the appropriate response for each item:

	Disagree	Slightly disagree	Slightly agree	Agree
I use Facebook to meet new people.	◉	◉	◉	◉
I use Facebook to learn more about people I have met.	◉	◉	◉	◉
I use Facebook to do teamwork with my classmates/colleagues.	◉	◉	◉	◉

[Q3-6-1]How many "friends" have you added without actually knowing who they are? *

Only answer this question if the following conditions are met: answer was "slightly agree" or "agree" at question Q3-6 (Please indicate the extent to which you agree the following statements: I use Facebook to meet new people.)

Please choose only one of the following:

- ◯Not yet
- ◯Less than 1%
- ◯1% ~ 25%
- ◯26% ~ 50%
- ◯More than 50%

[Q3-7] Do you consider Facebook a waste of time? *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose only one of the following:

- ◯Yes

- ○No

[Q3-7-1] Please indicate the extent to which you agree the following statements: *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-7(Do you consider Facebook a waste of time?)

Please choose the appropriate response for each item:

	Disagree	Slightly disagree	Slightly agree	Agree
Facebook is a waste of time, and I plan dropping it.	○	○	○	○
Facebook is a waste of time, but I have to use it.	○	○	○	○
Facebook is a waste of time, but I want to use it.	○	○	○	○

[Q3-7-2] Why do you think Facebook is wasting your time?

Only answer this question if the following conditions are met: answer was "yes" at question Q3-7(Do you consider Facebook a waste of time?)

Please write your answer here: _____

[Q3-7-3] Why do you "have to" use Facebook?

63

Only answer this question if the following conditions are met: answer was "slightly agree" or "agree" at question Q3-7-1 (Please indicate the extent to which you agree the following statements: Facebook is a waste of time, but I have to use it.).

Please write your answer here: _____

[Q3-7-4]Why do you want to use Facebook, despite the fact that you consider it a waste of time?

Only answer this question if the following conditions are met: answer was "slightly agree" or "agree" at question Q3-7-1 (Please indicate the extent to which you agree the following statements: Facebook is a waste of time, but I have to use it.).

Please write your answer here: _____

[Q3-8] Please indicates how frequently you use following communication methods: *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose the appropriate response for each item:

	Never	Several times a year	Several times a month	Several times a week	Everyday
Face-to-Face communication	○	○	○	○	○
Video call	○	○	○	○	○
Phone call	○	○	○	○	○
Cellphone message	○	○	○	○	○
Email	○	○	○	○	○

Handwriting letter	O	O	O	O	O
Blog	O	O	O	O	O
Other social network websites (Google +, MySpace etc)	O	O	O	O	O

[Q3-9]Please indicate how much you prefer to use following communication methods: *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose the appropriate response for each item:

	1 = Not at all	2	3	4 = Very much
Face-to-Face communication	O	O	O	O
Video call	O	O	O	O
Phone call	O	O	O	O
Message	O	O	O	O
Email	O	O	O	O
Handwriting letter	O	O	O	O
Blog	O	O	O	O

Other social network websites, such as MySpace, Google+ etc	⦿	⦿	⦿	⦿

[Q3-10]Please indicate the extent to which you feel intimacy with your friends through following two communication methods: *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose the appropriate response for each item:

	1 = Not at all	2	3	4 = Very much
Offline communication	⦿	⦿	⦿	⦿
Facebook communication	⦿	⦿	⦿	⦿

[Q3-11] Please indicate the extent to which you have revealed your negative feelings to your friends in both offline and Facebook communication: *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose the appropriate response for each item:

	1 = Not at all	2	3	4 = Revealed fully and completely

Offline communication	○	○	○	○
Facebook communication	○	○	○	○

[Q3-12] Please indicate the extent to which you have revealed your deep secrets to your friends in both offline and Facebook communication: *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose the appropriate response for each item:

	1 = Not at all	2	3	4 = Revealed fully and completely
Offline communication	○	○	○	○
Facebook communication	○	○	○	○

[Q3-13]Please indicate the extent to which you engage in following behaviors when you encounter a conflict with your friends face to face: *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose the appropriate response for each item:

1 = Never	2	3	4 = Always

Focusing the problem on hand	○	○	○	○
Losing control and verbally attacking the other person	○	○	○	○
Remaining silence for a long period of time	○	○	○	○
Giving in and not defending for yourself	○	○	○	○

[Q3-14] Please indicate the extent to which you engage in following behaviors when you encounter a conflict with your friends on Facebook: *

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please choose the appropriate response for each item:

	1 = Never	2	3	4 = Always
Focusing the problem on hand	○	○	○	○
Losing control and verbally attacking the other person	○	○	○	○

Remaining silence for a long period of time	◉	◉	◉	◉
Giving in and not defending for yourself	◉	◉	◉	◉

[Q3-15]Comparing your own offline and online communication behaviors, is there any difference? If yes, in what ways?

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please write your answer here:_____

[Q3-16] Comparing your friends' offline and online communication behaviors, generally speaking is there any difference? If yes, in what ways?

Only answer this question if the following conditions are met: answer was "yes" at question Q3-1 (Do you have a Facebook account?)

Please write your answer here: _____

[Q3-17] Is there any comments do you want to add about Facebook or the use of Facebook?

Please write your answer here: _____

[Q3-18]Thanks for participating in the survey! Your time has been much appreciated. If you have any comment to the research or the survey, feel free to leave a comment below.

Please write your answer here: _____

Appendix 5: Nationality Distribution of Respondents

Respondents come from 34 different countries or areas, the following table presents the distribution of the countries where the respondents come from.

United States (US)	16
China Mainland (CN)	12
United Kingdom (GB)	9
India (IN)	9
Turkey (TR)	7
Germany (DE)	6
Romania (RO)	5
Italy (IT)	5
Sweden (SE)	4
Canada (CA)	4
Mexico (MX)	3
Greece (GR)	3
Croatia (HR)	3
Australia (AU)	3
Spain (ES)	2
Netherlands (NL)	2
Ireland (IE)	2
United Arab Emirates (AE)	1
Russia (RU)	1
Portugal (PT)	1
Poland (PL)	1
Norway (NO)	1
Nepal (NP)	1
Latvia (LV)	1

Hungary (HU)	1
Hong Kong SAR China (HK)	1
Ghana (GH)	1
Egypt (EG)	1
Costa Rica (CR)	1
Cameroon (CM)	1
Brazil (BR)	1
Bolivia (BO)	1
Belgium (BE)	1
Argentina (AR)	1

Appendix 6: Independent t-test

Group Statistics

	Do you have a Facebook account?	N	Mean	Std. Deviation	Std. Error Mean
Extroversion	Yes	109	3.0431	.88101	.08439
	No	4	3.5750	.41932	.20966
agreeableness	Yes	109	3.9899	.60888	.05832
	No	4	4.2000	.46188	.23094
conscientiousness	Yes	109	3.4156	.71662	.06864
	No	4	3.5250	.72744	.36372
neuroticism	Yes	109	2.9495	.80584	.07719
	No	4	2.9000	.57155	.28577
openness To Experience	Yes	109	3.9523	.57632	.05520
	No	4	3.8250	.82209	.41105

The table suggests that:

1. Respondents in the group which has a negative attitude to Facebook (M [3] = 3.219, SE [4] = 0.195) have a higher score for *neuroticism* than the group which has a positive attitude to Facebook (M = 2.861, SE = 0.078), $t(107)$ [5] = 2.028, $p < 0.05$.
2. Two groups' respondents do not have significant differences on the level of *extroversion*, *agreeableness*, *conscientiousness*, and *openness*.

---

[3] The symbol *M* refers to the mean score of a personality trait.

[4] The symbol *SE* refers to the standard error of the mean.

[5] In this *t*-test, "*t*(107) = 2.028" refers to the *t*-value of the test, which indicates the differences between two groups. The bigger t-value is, the larger difference between two groups. The number "107" in the bracket refers to the degrees of freedom (*df*) in this *t*-test. The term degrees of freedom relates to "the number of observations that are free to vary, […] if we hold one parameter constant then the degrees of freedom must be one less than the sample size." (Field, 2013, p. 37). There are two groups, thus the degrees of freedom in this *t*-test is the sample size minus two.

Appendix 7: Compared-sample *t*-tests

		Mean	Std. Deviation	Std. Error Mean
Pair 1	[Offline communication] Please indicate the extent to which you feel intimacy with your friends through following two communication methods:	3.50	.753	.072
	[Facebook communication] Please indicate the extent to which you feel intimacy with your friends through following two communication methods:	2.49	.949	.091
Pair 2	[Offline communication] Please indicate the extent to which you have revealed your negative feelings to your friends in both offline and Facebook communication:	2.99	.957	.092
	[Facebook communication] Please indicate the extent to which you have revealed your negative feelings to your friends in both offline and Facebook communication:	2.24	1.026	.098
Pair 3	[Offline communication] Please indicate the extent to which you have revealed your deep secrets to your friends in both offline and Facebook communication:	2.84	1.064	.102
	[Facebook communication] Please indicate the extent to which you have revealed your deep secrets to your friends in both offline and Facebook communication:	1.67	.972	.093
Pair 4	[Focusing the problem on hand] Please indicate the extent to which you engage in following behaviors when you encounter a conflict with your friends face-to-face:	3.10	.793	.076
	[Focusing the problem on hand] Please indicate the extent to which you engage in following behaviors when you encounter a conflict with your friends on Facebook:	2.55	1.093	.105

Pair 5	[Losing control and verbally attacking the other person] Please indicate the extent to which you engage in following behaviors when you encounter a conflict with your friends face-to-face:	1.55	.726	.070
	[Losing control and verbally attacking the other person] Please indicate the extent to which you engage in following behaviors when you encounter a conflict with your friends on Facebook:	1.31	.588	.056
Pair 6	[Remaining silence for a long period of time] Please indicate the extent to which you engage in following behaviors when you encounter a conflict with your friends face-to-face:	2.25	.795	.076
	[Remaining silence for a long period of time] Please indicate the extent to which you engage in following behaviors when you encounter a conflict with your friends on Facebook:	2.25	.983	.094
Pair 7	[Giving in and not defending for yourself] Please indicate the extent to which you engage in following behaviors when you encounter a conflict with your friends face-to-face:	1.98	.805	.077
	[Giving in and not defending for yourself] Please indicate the extent to which you engage in following behaviors when you encounter a conflict with your friends on Facebook:	1.86	.876	.084

Pair 1 – changes in intimacy level from offline to online communication

On average, respondents reported that they experience a significantly higher level of intimacy through offline communication ($M = 3.5$, SE = 0.072) than Facebook communication ($M = 2.49$, SE = 0.091), $t(108) = 9.903$, $p < 0.001$, $r=0.476$.

Pair 2 – negative emotion disclosure (offline to online)

The table suggests that: Respondents reported that they are more likely to disclose their negative emotions in face-to-face situation (M = 2.99, SE = 0.92) than on Facebook (M= 2.24, SE = 0.98), $t(108) = 5.585$, $p < 0.001$, $r = 0.224$.

Pair 3 – private topics disclosure

Respondents reported that they are more likely to tell more private topics face-to-face (M = 2.84, SE = 0.102) than on Facebook (M = 1.67, SE = 0.093), $t(108) = 9.350$, $p < 0.001$, $r = 4.447$.

Pair 4 – conflict resolution preference (positive problem solving)

Positive problem solving: people prefer to face conflict and positively solve the problem in Facebook communication (M = 2.55, SE = 0.105) rather than in face-to-face situations (M = 1.55, SE = 0.076), $t(108)=4.737$, $p < 0.001$, $r = 0.172$.

Pair 5 – conflict resolution preference (conflict engagement)

Conflict engagement: people are easier to lose control and attack the conflict encounter in face-to-face situations (M = 1.55, SE = 0.070) rather than in Facebook communication (M = 1.31, SE = 0.056), $t(108) = 4.003$, $p < 0.001$, $r = 0.129$

Pair 6 – conflict resolution preference (withdrawal)

Withdrawal: there is no significant difference showed on choosing withdrawal strategy neither on Facebook (M = 2.25, SE = 0.094) nor during face-to-face communication (M = 1.55, SE = 0.070), p-value is 1.

Pair 7 – conflict resolution preference (compliance)

Compliance: The results show that people tend to give up solving the conflict and not defend herself in face-to-face communication (M = 1.98, SE = 0.077) than on Facebook communication, $t(108) = 1.272$, $p < 0.001$, $r = 0.015$.

Appendix 8: Analysis of variance (ANOVA) results

8.1 Analysis of variance (ANOVA) results of the five personality trait variables across the variables presenting frequency of using Facebook; the background variable gender; and their interactions.

Source of effects	df	F statistics	*p*-value	Partial Eta Squared
Extroversion				
Gender	1	.544	.463	.007
Frequency of visiting Facebook	3	.342	.795	.013
Hours spent on Facebook	2	.879	.419	.022
Frequency of updating Facebook status	5	.257	.935	.016
Frequency of using Facebook messenger	4	.916	.459	.045
Gender * Frequency of visiting Facebook	3	.286	.835	.011
Gender * Hours spent on Facebook	2	.060	.942	.002
Gender * Frequency of updating Facebook status	5	1.729	.138	.101
Gender * Frequency of using Facebook messenger	4	.427	.789	.022
Agreeableness				
Gender	1	.444	.507	.006
Frequency of visiting Facebook	3	.201	.895	.008
Hours spent on Facebook	2	.267	.766	.007
Frequency of updating Facebook status	5	.742	.595	.048
Frequency of using Facebook messenger	4	.174	.951	.009
Gender * Frequency of visiting Facebook	3	.755	.523	.030
Gender * Hours spent on Facebook	2	.285	.753	.008
Gender * Frequency of updating Facebook status	5	.732	.601	.048
Gender * Frequency of using Facebook messenger	4	.574	.682	.030
Conscientiousness				
Gender	1	.017	.896	.000
Frequency of visiting Facebook	3	1.489	.224	.055
Hours spent on Facebook	2	.687	.506	.018
Frequency of updating Facebook status	5	.873	.503	.054

Frequency of using Facebook messenger	4	1.288	.282	.063
Gender * Frequency of visiting Facebook	3	.894	.448	.034
Gender * Hours spent on Facebook	2	4.188	**.019**	.098
Gender * Frequency of updating Facebook status	5	.662	.654	.041
Gender * Frequency of using Facebook messenger	4	1.884	.122	.089
Neuroticism				
Gender	1	2.828	.097	.035
Frequency of visiting Facebook	3	2.232	.091	.080
Hours spent on Facebook	2	2.185	.119	.054
Frequency of updating Facebook status	5	.741	.595	.046
Frequency of using Facebook messenger	4	.786	.538	.039
Gender * Frequency of visiting Facebook	3	.760	.520	.029
Gender * Hours spent on Facebook	2	.524	.594	.013
Gender * Frequency of updating Facebook status	5	.556	.733	.035
Gender * Frequency of using Facebook messenger	4	1.386	.247	.067
Openness to Experience				
Gender	1	.793	.376	.010
Frequency of visiting Facebook	3	.299	.826	.012
Hours spent on Facebook	2	.032	.969	.001
Frequency of updating Facebook status	5	.133	.984	.009
Frequency of using Facebook messenger	4	.854	.496	.042
Gender * Frequency of visiting Facebook	3	.479	.698	.018
Gender * Hours spent on Facebook	2	.118	.889	.003
Gender * Frequency of updating Facebook status	5	.138	.983	.009
Gender * Frequency of using Facebook messenger	4	.564	.690	.028

The ANOVA analysis has been performed. The result indicates:

1. Statistically, none of the three Facebook using frequency variables have found a statistically significant association with any of the five personality traits directly ($p >$ 0.05 in all cases).

However, when the researcher takes account gender effect, the statistics test shows a new result:

2. The interaction between gender and hours spent on Facebook was found to have a statistically significant effect on the personality trait variable, *conscientiousness* (*F* [6]= 4.188, *p* < 0.05).

8.2 Analysis of variance (ANOVA) results of the five personality trait variables across the variables presenting purpose of using Facebook; the background variable gender; and their interactions.

Source of effects	df	F statistics	*p*-value	Partial Eta Squared
Extroversion				
Gender	1	2.614	.109	.029
Purpose is to meet new friends	3	.799	.498	.026
Purpose is to learn more about people around	3	.357	.784	.012
Purpose is teamwork	3	3.865	**.012**	.115
Gender * Meet new friends	3	1.403	.247	.045
Gender * Learn more about people around	3	.399	.754	.013
Gender * Teamwork	3	2.395	.074	.075
Agreeableness				
Gender	1	2.464	.120	.028
Purpose is to meet new friends	3	.460	.711	.016
Purpose is to learn more about people around	3	2.210	.093	.072
Purpose is teamwork	3	.455	.714	.016
Gender * Meet new friends	3	.686	.563	.023
Gender * Learn more about people around	3	.618	.605	.021
Gender * Teamwork	2	.045	.956	.001

---

[6] An ANOVA test produces an F value, which also called F-ratio. The value explains whether the experiment manipulation has an effect on the results of individuals' differences, but it does not explain how large the effect is. An F value is reported along with a *p*-value to explain whether or not the statistics result possible is a chance result. (F > 1 indicates the experiment manipulation has some effect on the result, however, the p-value is lower than 0.05 indicates the result still valid.)

Conscientiousness

Gender	1	.031	.861	.000
Purpose is to meet new friends	3	.669	.573	.022
Purpose is to learn more about people around	3	.418	.740	.014
Purpose is teamwork	3	1.538	.210	.049
Gender * Meet new friends	3	.499	.684	.017
Gender * Learn more about people around	3	.110	.954	.004
Gender * Teamwork	3	1.507	.218	.048

Neuroticism

Gender	1	.060	.808	.001
Purpose is to meet new friends	3	.187	.905	.006
Purpose is to learn more about people around	3	.871	.460	.029
Purpose is teamwork	3	.616	.607	.020
Gender * Meet new friends	3	.349	.790	.012
Gender * Learn more about people around	3	.874	.458	.029
Gender * Teamwork	3	.557	.645	.018

Openness to Experience

Gender	1	2.140	.147	.023
Purpose is to meet new friends	3	.338	.798	.011
Purpose is to learn more about people around	3	1.226	.305	.040
Purpose is teamwork	3	1.327	.271	.043
Gender * Meet new friends	3	.496	.686	.016
Gender * Learn more about people around	3	2.224	.091	.070
Gender * Teamwork	3	.417	.741	.014

The table suggests that:

1. The five personality traits are not associated with the purpose of using Facebook to look for a new relationship.
2. The five personality traits are not associated with the purpose of using Facebook to maintain existing social networks.

3. The only statistically significant association found was between the personality trait *extroversion* and the tendency of using Facebook as a platform of teamwork communication, $F = 3.865$, $p < 0.05$.

9.1 The statistic results of Pearson Correlation Test between personality traits and one's feeling of intimacy level in face-to-face environment and on Facebook

		Intimacy Level (Face-to-face)	Intimacy Level (Facebook)
Pearson Correlation	Extroversion	**.213**	.143
	Agreeableness	**.284**	.058
	Conscientiousness	**.251**	**.196**
	Neuroticism	**-.227**	-.037
	Openness To Experience	**.198**	**.268**
Sig. (1-tailed)	Extroversion	**.013**	.069
	Agreeableness	**.001**	.274
	Conscientiousness	**.004**	**.021**
	Neuroticism	**.009**	.353
	Openness To Experience	**.020**	**.002**

Left column:

6. *Extroversion* ($r = 0.213$), *agreeableness* ($r = 0.284$), *conscientiousness* ($r = 0.251$) and *openness to experience* ($r = 0.198$) are significantly positively correlated to one's intimacy level in face-to-face communication. All *p*-values are less than 0.05.
7. *Neuroticism* ($r = -0.227$) is negatively correlated to one's intimacy level in face-to-face communication, $p < 0.05$.

In the correlation test between personality traits and one's intimacy level in Facebook communication, the results (right column) shows that:

8. Only the level of *conscientiousness* ($r = 0.196, p < 0.05$) and *openness to experience* ($r = 0.268, p < 0.01$) are significantly positively correlated to one's online intimacy level.

Comparing the two correlation results, it can be found that:

9. An individual's level of *extroversion*, *agreeableness* and *neuroticism* no longer influence her perception of intimacy with friends in online communication, only the level of *conscientiousness* and *openness to experience* matter.

At the same time, it should be noticed that the correlation degree between *conscientiousness* and intimacy is lower in online communication than in offline communication; the correlation degree between *openness to experience* and intimacy is higher in online communication than in offline communication.

9.2 Results of Pearson Correlation show the correlations between one's personality traits and the level of negative emotion disclosure and private topics disclosure in face-to-face environment and on Facebook

		Negative Emotion disclosure (face-to-face)	Negative Emotion disclosure (Facebook)	Private topics disclosure (face-to-face)	Private topics disclosure (Facebook)
Pearson Correlations	Extroversion	**.130**	-.030	**.169**	.136
	Agreeableness	**.165**	-.023	.153	.041
	Conscientiousness	**.231**	**.187**	.129	.116
	Neuroticism	-.069	.136	.113	**.169**
	Openness To Experience	**.279**	.152	.137	**.233**
Sig. (1-tailed)	Extroversion	**.089**	.379	**.039**	.080
	Agreeableness	**.043**	.407	.056	.335
	Conscientiousness	**.008**	**.025**	.090	.114
	Neuroticism	.238	.080	.122	**.040**
	Openness To Experience	**.002**	.057	.077	**.007**

The result shows that:

5. An individual's level of *agreeableness* ($r = 0.165$, $p < 0.05$), *conscientiousness* ($r = 0.231$, $p < 0.01$)) and *openness to experience* ($r = 0.279$, $p < 0.01$) are positively related to the willingness to express negative emotions in face-to-face situations.
6. Only the level of *conscientiousness* ($r = 0.197$, which is a decreased level of correlation, $p < 0.05$) correlate with negative emotion expressing in Facebook communication.
7. An individual's willingness to talk about private topics are significantly correlated with her level of *extroversion* ($r = 0.169$, $P < 0.05$) in face-to-face communication,
8. An individual's willingness to talk about private topics are significantly correlated with one's level of *neuroticism* ($r = 0.169$, $p < 0.05$) and *openness to experience* ($r = 0.233$, $p < 0.01$) in Facebook communication.

9.3 Results of Pearson Correlations Tests between five personality traits and conflict resolution styles in face-to-face environments

		Positive problem solving	Conflict engagement	Withdrawal	Compliance
Pearson Correlations	Extroversion	.092	.075	-.093	**-.205**
	Agreeableness	**.240**	**-.167**	-.043	.037
	Conscientiousness	**.214**	-.059	-.039	**-.279**
	Neuroticism	-.350	.083	**.190**	.121
	Openness To Experience	**.205**	.088	**-.239**	**-.160**
Sig. (1-tailed)	Extroversion	.171	.218	.167	**.016**
	Agreeableness	**.006**	**.041**	.330	.350
	Conscientiousness	**.013**	.270	.342	**.002**
	Neuroticism	.000	.196	**.024**	.104
	Openness To Experience	**.016**	.182	**.006**	**.049**

The table suggests that:

6. An individual's level of *agreeableness* ($r = 0.240$, $p < 0.01$), *conscientiousness* ($r = 0.214$, $p < 0.05$) and *openness to experience* ($r = 0.205$, $p < 0.05$) are positively

correlated to choosing positive problem-solving strategy, and the level of *neuroticism* ($r = -0.350$, $p < 0.001$) negatively related to the choosing of this strategy;

7. One's level of *agreeableness* is negatively related to choosing conflict engagement ($r = -0.167$, $p < 0.05$)
8. *Neuroticism* is positively ($r = 0.190$, $p < 0.05$) and *openness to experience* ($r = -0.239$, $p < 0.01$) negatively related to withdrawal strategy choosing;
9. *Extroversion* ($r = -0.205$, $p < 0.05$), *conscientiousness* ($r = -0.279$, $p < 0.01$) and *openness to experience* ($r = -0.160$, $p < 0.05$) are negatively related to preference of choosing compliance strategy.

9.4 Results of Pearson Correlations Tests between five personality traits and conflict resolution styles when communicate through Facebook

		Positive problem solving	Conflict engagement	Withdrawal	Compliance
Pearson Correlations	Extroversion	-.023	-.046	-.119	-.021
	Agreeableness	.056	-.136	-.017	-.126
	Conscientiousness	.069	-.045	.131	-.085
	Neuroticism	-.097	.135	-.088	.121
	Openness To Experience	.113	-.092	-.090	-.006
Sig. (1-tailed)	Extroversion	.406	.318	.108	.414
	Agreeableness	.282	.079	.429	.096
	Conscientiousness	.237	.323	.087	.190
	Neuroticism	.157	.081	.181	.105
	Openness To Experience	.122	.170	.176	.476

The table shows that:

1. There are no significances in all correlation tests between personality traits and conflict resolution preferences.