

# **Maintaining friendships through computer-mediated communication: an investigation of university students' use of asynchronous and synchronous communication.**

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# ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signed: Zhulan  
Date: 28/03/2020

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# ABSTRACT

This study investigates the ways in which university students maintain their existing friendships through different forms of computer-mediated communication (CMC). It aims to contribute to a greater understanding about differences between students' use of asynchronous communication (that is, communication that has a time lag or is intermittent such as online comment sections, texts, and social media messaging) and synchronous communication (that is, platforms or apps that involve real-time communication such as facetime and live call). In applying polymedia theory which is concerned with the relationship between these different forms of media and interpersonal communication, this study aims to offer a greater understanding about how people maintain their existing friendships more productively by digital means.

The research applies a positivist methodological approach that involves quantitative and qualitative research in collecting and analyzing the data from an online survey of 60 international and domestic students attending various universities in Auckland, New Zealand. They were asked about their media preferences for using either asynchronous or synchronous communications in the maintenance of their friendships. Factors relating to their choices included: the efficiency of the technology, participants relational stage with a friend (i.e. close or just an acquaintance), the type of situation with a friend (eg any conflicts or issues), intimacy, geographical distance, location (eg home or university) and time of day, as well as participants' background attributes (eg gender, time spent living in Auckland). The data was analyzed quantitatively using statistical analysis through Qualtrics and excel statistical software.

The findings of the study showed that social media instant messaging (that is, synchronous communication) was the most popular method used by this sample of university students. However, it was also found that they switched between different communication methods for friendship maintenance and their decision making in doing this was affected by the various factors and motivations above.

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# CHAPTER ONE: INTRODUCTION

## 1.1 Background

Since the 1990s the world has experienced increased contact between people through the use of digital communication technologies such as emails, texting, and audio/visual talking through social network sites. The research into Computer-mediated-communication (CMC) began in the 1970s according to Baym (2006) but for CMC in the use of interpersonal connections it increased from the 1990s. Baym (2006) points out that “although CMC was not invented with interpersonal connections in mind , the rise of the Internet shows that the technology is fundamentally social” (p. 35). CMC - is “an umbrella term which refers to human communication via computers” (Simpson, 2002, p. 1). There are two forms of CMC - synchronous and asynchronous interactions. Communication that is conducted in real-time such as talking via a mobile phone is known as synchronous communication. This immediacy tends to make people feel closer together – particularly when separated by long distances. Alternatively, other forms of digital communication, such as emails, enable a person to spend time composing a message before they send it. This is known as asynchronous communication as it means people have more time to construct a message before sending. This enables thought to go into aspects such as content, tone and self-presentation. It also allows sustained group interaction such as comments that can be experienced on social network sites. A sustained group interaction refers to the sustainable interaction between two people or groups of people where people browsing others’ homepages and updates and comment on that while other people are able to see (status updates and wall post). It is also a way to continuously appear in the social sites and maintain contact with friends.

Both forms of communication, according to Baym (2010), have their own costs and benefits. However, the main disadvantage is that fewer social cues – contextual, visual and auditory – are not always available to users (Baym, 2010). For example, particularly if communication is text-based and people may feel they are being a nuisance by their misinterpretation and misunderstanding words. It is also possible that people may feel general

distraction by texting while doing something else. It is still believed that the best way to keep in touch with friends is through face-to-face communication (Mishna et al., 2017).

Not coincidentally, the penetration of the Internet has strongly refocused research on relationships to consider CMC when it comes to establishing a solid friendship. Research has indicated that online friendships display a slightly higher level of intimacy than that of offline relationships suggesting that digital communications can impact on people's friendships (Chan & Lo, 2014). Individuals can extend the boundaries associated with traditional forms of communication such as posted letters and use digital media to further develop relationships online or maintain existing relationships remotely (Eljarn, 2015). Likewise, as demonstrated by Dainton (2013), maintaining relationships is the users' primary motive for using Facebook which is why it is perhaps identified as being 'social' media.

It appears that in CMC research "most of the attention ... has explored the formation of new relationships" (Baym, 2006, p. 43) that occur online which suggests that this is a significant area of interest. In fact, according to Wang and Andersen (2007), "research on computer-mediated relationships lacks contextual sensitivity" (p. 4) and therefore there is concern about how this might affect people's friendships. Of particular note is the fact that CMC in pre-existing relationships appears to rarely be discussed by researchers, and when it is, the relationship type (i.e. family, friend, romantic partner, etc.) is either not specified or treated as a major category of interpersonal relationships.

Friendships are one of the most significant and important types of relationship in people's lives. The warm feelings of friendship are a cornerstone of happiness and emotional wellbeing (Andersen & Guerrero, 1998; Samter, 2003). Palmer and Herbert (2016) indicate that people are willing to depend on friends for help, advice, and support. Likewise, the voluntary and reciprocal qualities of friendship are a unique and indispensable part of social life (Fehr, 1996; Hays, 1988; Rawlins, 1992). Ruppel et al. (2017) also point out that friendships lack the formalization and societal expectations that characterize other relationship types, such as family or romantic relationships. As a result, friendships can be seen to be vulnerable to a range of variables.

## 1.2 Polymedia theory

Polymedia theory, which underpins this research, has only recently emerged in the last seven years and is used to describe the “emerging environment of proliferating communication opportunities and its consequences for interpersonal communication” (Madianou & Miller, 2012, p. 170). Simply put, unlike the pre-Internet era when users had a limited number of media choices, this theory highlights the range of different forms of digital communication that people can choose from to use especially during interpersonal communication. As it is indicated by Madianou and Miller (2013), there is evidence showing that media users conceive digital media world in relation to “an integrated structure” with different forms of media (p. 174). People choose one particular communication type and switch to another for different needs without abandoning each media.

In particular polymedia theorists have emphasized the social and emotional consequences in selecting different forms of new media which are highly relevant to this research. Madianou (2014) argues that as individual communication acts are no longer dictated by limited media access and high cost, people are likely to be judged on why they selected one particular media rather than others for emotional and social needs. As a consequence, people’s primary concern shifts from a focus on cost under limited methods to contact their friends to an emphasis on which way to achieve a better result of friendship management when it comes to the maintenance of friendship in this integrated system with multiple choices of communication. In this way of understanding, polymedia becomes “parts of relationship and emotional management” (Madianou & Miller, 2013, p. 170).

According to Tandoc et al. (2019) who conducted a survey on people’s different use of social media platforms, more than half of the participants in their study named three or more social media platforms that they use. Nardi et al., (2000) stated that media switching was further observed in research on how users start their conversations on instant messaging and then switch to synchronous communication such as face-time conversation for richer interactions and relationship maintenance. Moreover, people expected closer friends to “put forth an extra effort to maintain relationships through additional communication methods” such as live-real time synchronous communications (Bryant & Marmo, 2009, p. 1). Owing to the fact that new media and digital communications offer many affordances for people to use when it comes to maintaining friendships,

people can choose different communication methods through digital media under different circumstances for social and emotional consequences.

Expanding on the idea of polymedia, this theory has then been applied across a variety of social contexts. Peng examined migrant students' interpersonal communication in Hong Kong, showing that the way they communicate with their Hong Kong local friends may be different from that with their friends back home (as cited in Tandoc et al., 2019). Baldassar (2016) also explored how people provide emotional support through various digital means over distance. Through such a polymedia environment, geographical distance might be a factor which influences students' choice from one media type to another. Boczkowski et al. (2018) indicate that young people in Argentina manage the proliferation of social media platforms in their everyday lives by attributing different meanings to different platforms. The platforms they choose also shape the particular ways they use to maintain relationships, which further reveals their needs to use certain methods concerning particular factors.

In this study, I will analyze the university students' preference of synchronous or asynchronous CMC for friendship maintenance purposes and further illustrate whether certain factors (efficiency, friends' relational stage, intimacy, geographical distance, location and timing, friendship situation, people's background attributes) influence students' preference. I will draw on a polymedia theory framework that examines how users exploit those functions of media to manage their emotions and relationships as this "advances the debate on the social uses of communication technologies by considering additional layers of meaning, functions and consequences" (Madianou & Miller, 2013, p. 173).

Polymedia represents a shift towards a more socialized conception of media - when cost and access become less important, people then start to consider the reasons why any particular medium is chosen as a social act for relationships (Madianou & Miller, 2013). Polymedia draws on various approaches: mediation or mediatization, "which try to understand the mutual shaping of social processes and the media" (Madianou & Miller, 2013, p. 174), as well as the approaches of the social shaping of technology and domestication. That is, people's "social life is lived in (rather than with) different forms of media practices and mediated interactions" (Madianou & Miller, 2013, p 174).

Bolter and Grusin (2000) indicate that polymedia emerges gradually through a process of remediation which is where “new media technologies improve upon or remedy prior technologies” (p. 3), gradually introducing more communication methods for people to use (Madianou & Miller, 2013). At the same time, remediation also presents people with the idea that communication can be with anyone from anywhere depending on which method is used and what facilities it offers. Bolter and Gromala (2003) also highlight that remediation entails hypermediacy and immediacy – the former uses digital applications to “erase the sense of the media and achieve immediate emotional response”, while the latter’s use of media “create a feeling of fullness and satiety of experience, which can be taken as reality” (p. 111). As a consequence, the media is more and more in line with the aesthetic needs of humanity which seen from the perspective of humanity nature.

A polymedia theoretical framework therefore sits well with this research because people make choices from the many different kinds of media available to them depending on what works best for their relationships (Madianou & Miller, 2003). In this way, it allows people to consider media as an integrated environment of affordances without considering issues of access and cost, but rather in thinking about the emotional management and social needs within the media that has become so important for social relationships.

### **1.3 Research objectives**

While many empirical studies emphasize the potential that the Internet provides for relationship initiation and development, understanding how CMC assists in the maintenance of relationships is not well understood (Aylor, 2003; Baym, 2006; Rabby & Walther, 2003; Stafford, 2005; Walther & Parks, 2002). In particular, limited attention has been paid to research investigating pre-existing friendships – that is friendships that were founded offline in the first instance - and not much is known about this when it comes to university students and their maintenance of friendship through digital technologies. However, some research has shown that younger people are more interested in using synchronous communication. Taipale (2016) considered this generation that was born in the 1990s or later as the second digital generation who are more engaged with synchronous communication online.

As a university student myself, also in the second digital generation, who has friends in my home country of China, as well as friends in my host country of New Zealand, I was interested to find out more about how university students maintained existing friendships when they were at a different university or lived in a different city or country.

According to Oswald and Clark (2003), the first year of university often includes moving away from home and the development of new social groups. At the same time, they are at risk of losing contact with existing friends especially if they move to a different city or country to study and these friendships may become less satisfying (Shaver et al., 1985). Other effects can be loneliness, stress and other psychosocial problems (Ruppel et al. 2018), such as “friend-sickness” (concern for the loss of or change in precollege friendships) (Paul & Brier, 2001), or even suicide (Bennion et al., 2018) because of the pressure for study, work or social interactions.

As university students represent a generation growing up with the Internet as part of their everyday routines (Wang and Anderson, 2007), it is possible that those who are privileged with the educational, financial and technological resources of digital communication may use it to overcome issues with maintaining their friendships. Scholars have pointed out that instead of asking whether this new information and communication technology brings about changes in contemporary societies and human interactions, the key inquiries revolve around “under what circumstances, in what ways, and to what extent” relationships are influenced by new forms of media communication (Herring, 2004, p. 27). Above all, it is reasonable to further illustrate specific online communication ways more than just social media platforms (such as Facebook, Twitter, Instagram...) in friendship maintenance. Baym (2010) also points out that some media platforms such as Facebook offer both synchronous and asynchronous forms of communication and therefore tend to be popular to access.

Therefore, rather than analyzing the impact of computer-mediated communication (CMC) on interpersonal relationships in general, the objective of this study is to focus specifically on the ways in which university students use CMC to maintain those friendships that were previously established and to identify the media preferences that might influence the ways in which this occurs.

Based on this background, the objectives of this study can be explained in terms of the following research questions:

**RQ1:** About media consumption/preference

What are the differences between university students' use of asynchronous and synchronous communication when it comes to maintaining existing friendships?

**RQ2:** Which of the following factors appear to contribute to students' different uses of communication when it comes to friendship maintenance?

(1. Efficiency 2. Friends' relational stage 3. Intimacy 4. Geographical distance 5. Location and timing 6. Friendship situation 7. People's background attributes)

#### **1.4 Significance of the study**

The significance of this study is that it will provide insights into the role that digital communication can play in friendship maintenance. Friendship is an important aspect of people's lives and so requires investigation. Takasaki (2017) states that long-term friendship is a vital source of support for people during the relationship, education, and residential transitions. A problem in modern society is the declining stability of friendship for individualized social support and value, with conflicting views on how to tackle this worrying trend. My research started with the aim of finding out how university students maintain friendship through CMC in a technological information superhighway and which are the significant factors related to CMC that may prevent people from keeping their friends. This study will contribute to the emerging research being carried out in this new sentence and there is little research on existing friendship maintenance with CMC settings around university students. Indeed, participants, a group of people who are university students that may value friendship more than anything else, may benefit from this study, as the cumulative results of research into CMC on friendship maintenance may help people improve their understanding of the relationship between media use and friendship maintenance in order to manage better friendships in the future.

## **1.5 Thesis overview**

This thesis is organized into six chapters. In the next chapter (Chapter Two) that follows this introduction I review the scholarly literature that is relevant to the conceptual background of CMC and the two main communication types under study when it comes to friendship maintenance – synchronous and asynchronous communication. I also highlight various studies that cover a range of issues which may influence university students' choice of communication methods to maintain their existing friendship in terms of efficiency and friends' relational stage of communication methods, intimacy, geographical distance, location and timing, friendship situation as well as people's background attributes.

Chapter Three introduces the methodology and the research instruments used in this study – that is, an online survey of university students in Auckland, NZ. The methodological approach that involves quantitative and qualitative research under this study is also introduced, followed by a discussion identifying the way these methods are applied. Following this, the process for data collection and analytical procedures are discussed. A consideration of ethical issues of the research is also presented in this chapter.

Chapter Four provides the results of the quantitative analysis of the survey questions and the qualitative analysis of the two open-ended questions. It begins with a focus on the results of each question in the questionnaire. Then it further examines the cross tabulations of participants' preference/attitudes of communication methods and their background attributes (gender, international or not, university qualification and time length living in Auckland).

Chapter Five presents a discussion of the findings. Initially, it provides a summary of the key observations from this research. Following that, comparisons and relationships with the results of previous studies and related theories are discussed.

Chapter Six provides a discussion of the implications and contribution of my research, limitations, and the potential for future studies.

# CHAPTER TWO: LITERATURE REVIEW

## 2.0 Introduction

This chapter serves to situate the thesis in the scholarly literature by first providing further information about CMC, the two main communication methods – synchronous and asynchronous and explaining the notion of friendship – particularly the understanding of pre-existing friendships. Following section examines some of the empirical studies on two main CMC types with friendship maintenance, namely, synchronous and asynchronous communication.

Following this, a number of factors will be highlighted from studies that suggest factors that may influence university students' different use of two communication type to maintain their existing friendships. These include efficiency, friends' relational stage, intimacy, geographical distance, location and timing, friendship situation as well as people's background attributes which I discuss in more detail. The essence of methodology or findings derived from these studies, merits or limitations, will serve as the baseline information to which this research may refers.

## 2.1 CMC, friendship and maintaining friendship

### 2.1.1 CMC-Synchronous and Asynchronous communications

CMC is generally understood as both task- and relationship-oriented communication conducted between human beings via the instrumentality of computers (Thurlow, Lengel & Tomic, 2004; Wang & Anderson, 2007). Many scholars believe that one of the most significant functions of computer-mediated communication (CMC) is its contribution to the evolution of social communication, which includes (1) synchronous communication, such as is found in instant messages, audio call and video call, occurs in real-time. (2) Asynchronous communication, such as email and text, have a time delay between messages (Ferris, 1997; Wang & Anderson, 2007; Baym, 2010; Eljarn, 2015)

In a recent study by McArthur et al. (2018), synchronous CMC is a term continually used to describe “technologies or software that require two or more devices to be connected at the same time” (p. 65) such as skype video conferencing, older forms of chat messaging, whereas asynchronous types of CMC such as email do not require the sender and receiver to be online and connected simultaneously. However, the boundaries appear to become blurred between the two types of CMC. For the latest social software, instant messaging no longer requires the sender and receiver online at the same time, which works practically the same as text with time delay treated as asynchronous technology. In a further explanation, when the sender and receiver happen to be responding immediately, people may obtain the synchronicity by exchanging information from instant messaging while the technology itself remains asynchronous.

### **2.1.2 Preexisting friendship**

According to Spencer and Pahl (2006), people may consider their various kinds of relationships important at a particular time of their lives (whether they are school age, teenagers, or older) and can include family, friends, co-workers, neighbors, as well as people who represent multiple relationship types, which is called a personal community (as cited in Takasaki, 2017). Unsworth, Kragt and Johnston-Billings (2019) defined friendship as “the positive bond between two people...it involves a voluntary and amiable relationship that includes support for each other's social and emotional goals and a feeling of equality between members” (p. 2). Friends are especially important for the health and well-being of university students especially those who live alone away from their family because they can provide emotional support, small services, and companionship (Pahl & Pevalin, 2005). In Birditt and Antonucci's (2007) article, they argue that for people who had a best friend, having at least two high-quality friendships are associated with greater well-being.

The preexisting friendship in this research refers to friendships that students have previously established whether this has been in face-to-face or through online interactions. Likewise, CMC is also a way friends communicate with each other to maintain their friendship, not for establishing friendships.

## **2.2 CMC use on friendship maintenance**

### **2.2.1 CMC with media consumption**

In the early 2000s, a lot of scholars claimed that email and instant messages were interpersonally oriented among various types of CMC (Baym, 2002). This means that people use these communication methods oriented with social and personal purposes not just for task-oriented issues in the office or at school. Email was also used daily by millions of people for personal interactions because it was a fast and efficient method of exchanging messages as stated by Madrid and Wiseman's (2003) research. This 'exchange' can occur with anyone, with no shared physical space or shared sense of time; meanwhile it provides people with ease of use and a high level of security at a low cost. According to Wang and Anderson's (2007) research, email and instant messages are predominantly used for communicating with friends to maintain their relationships. Chen et al. (2002) also point out that people can maintain their friendships through email and instant messaging by increasing the ease and frequency of social contacts, especially with one another at a distance. However, a lack of nonverbal cues may also lead to misinterpretation and misrepresentation of a text message as well as email compared with face-to-face communication because this provides immediate feedback through various nonverbal cues by means of tone of voice, gesturing and eye contact (Madrid & Wiseman, 2003).

In later research on friendship maintenance, the use of video chat was shown to have increased. A finding in Okdie et al.'s (2011) research may have implications for this showing that asserts richer communication methods (video talk) may lead to more relationally satisfying than leaner channels such as email, text and social media comments. Similarly, social media instant messaging as a synchronous communication stands out and becomes people's part of everyday communication to maintain their proximal relationships as demonstrated by Ramirez and Broneck (2009). Through these communication methods, individuals can determine whether one's communication with one another is made public or is kept private allowing for greater shared ownership of information. For example, social media users can manipulate privacy settings with online posts to control others' access to one's own information based on different kinds of friends. Friends can also have group chatting in text-based settings or even audio or video talk through social media. Owing to the ease and multifunction of social media sites, this also allows users to edit content like selfies, videos and emoji, instantaneously communicating with friends in emotional ways. Many current social networking sites such as

Facebook provide users with the ability to engage in both synchronous (instant messaging, audio or video chat) and asynchronous (post, text or comments) communication (Eden & Veksler, 2016).

More recent study shows that people now frequently have more options for media for almost any utterance than ever before. As a result of which, people manage their friendship not only with texting but also simultaneously with email, audio talk, skype, social media instant messaging, social media posts/comments and so on (Gershon, 2010). Gershon (2010) illustrates that more options have meant more choices between different types of relationships. Apparently, people begin to choose different media to satisfy their particular relational communication needs. Recently, Tandoc et al. (2019) presented a concept of “platform-swinging”, also referred to as “media switching”, in terms of media use as a method of communicating with people. This means that media users are often not only moving between various channels but also have more types of communication options to choose from such as Facebook including synchronous communication such as instant messaging and asynchronous ones in terms of comments and posts. Above all, this research further illustrates that online communication for the purpose of friendship maintenance is conducted through a range of different platforms using different communication methods (synchronous or asynchronous). More importantly, people’s choice of the CMC method in different situations may be influenced by certain factors as follows.

## **2.2.2 Factors which may drive the different choice of CMC on friendship maintenance**

### **2.2.2.1 CMC with efficiency**

Our understanding of the general effects of CMC on human relationships is still in its infancy. According to Rabby and Walther (2003, p.158) “significant weaknesses exist in the dominant theories that describe CMC relationships, especially insofar as relationship maintenance is concerned”. Current CMC theories are often biased toward traditional interpersonal communication assumptions situated in face to face settings, and theoretical adaptations are needed to study relationships involving a mix of traditional communication channels and new media (Baym, 2002, 2006; Lea & Spears, 1995; Rabby & Walther, 2003; Stafford, 2005). Furthermore, scholars today explain relational communication online from perspectives which bring

downsides to deep emotional connection but ignore its efficiency. Speaking of friendship maintenance, CMC with efficiency refers to communication methods which are time-saving but at the same time achieve the greatest effect. When people talk about task-oriented content, certain social media still increase the frequency people contact each other owing to the ease of information circulating.

A substantial amount of studies show that CMC can enhance the communication between friends by increasing the ease and frequency of social contacts, especially with the ones at a distance (Chen et al, 2002; Pew, 2002; Quan-Haase & Wellman, 2002). Matook et al.'s (2015) investigation showed that text-based features of social media systems facilitate postings where friends can offer congratulations, encouragement, and best wishes as well as giving social and emotional support most efficiently. Liu et al. (2017) also suggested text-based CMC as the most efficient way to communicate with friends because text messages delivered to an end user's computer are difficult to be ignored. Text-based CMC such as instant messaging on mobile devices has a quick response time because users especially university students frequently look at their phones several times a day. Furthermore, compared with face-time which can take up a lot of time at one time, texting can help people maintain multiple streamlined conversations at once (Liu et al., 2017). Therefore, efficiency may be one factor that influences people's communication choice among synchronous tools and asynchronous ones on friendship maintenance.

#### **2.2.2.2 CMC with friends' relational stage**

Friends' relational stage refers to how close people are with a friend. Different types of friendships may vary, however, in both the extent and type of maintenance behavior employed (Wang & Anderson, 2007). Bryant and Marmo (2012) also state that friendships can be negotiated and sustained at various levels. Indeed, this term 'friendship' might stand for various friendship types in terms of relationship strength and quality, normally conceptualized as occurring in close, casual and acquaintance forms (Baym et al., 2004; Bryant & Marmo, 2012). A lot of scholars such as Boase et al. (2006) and Hays (1989) note that close friendships involve high levels of interpersonal interaction which cannot be easily replaced because they experience more shared interests and social support than casual friends. Casual friendships exist in people's early stages of relationship

and have not yet achieved that much closeness present in close friendships. Furthermore, acquaintance relationship is a stage where friendship is recently developed, yet lacks a sense of personal connection, intimacy and relational quality (Baym et al., 2007).

Owing to the difference in friendship types, people may use various types of CMC to maintain their friendship based on different levels of relational stage. As such, friends might expect different behaviors during online interactions than during offline interactions. That is to say, people communicate with a closer friend using one specific type of communicating method which may vary from that with a friend just met. According to Wang and Anderson (2007), as a relationship unfolds, the number of communication channels increases from a single medium to multiple media. Indeed, the closer friendship people have, the more communication channels they adopt to keep their social ties. Close friendship networks likely require more maintenance than casual friendships networks and people willing to pay more effort into closer friendships. In Bryant and Marmo's (2012) survey, participants labeled their close friends as very close or best friends, which is a small number of people, and they interact with each other through numerous channels of communication (e.g. audio/video talk, email, Facebook). Furthermore, Wang and Anderson (2007) indicate that closer friends use more synchronous components (e.g. instant chat, video/audio talk) to maintain their relationships, which to some extent provides a way for them to hold a real-time conversation and gives friends a sense of immediacy like face-to-face interactions. However, for acquaintance relationships, this communication type with immediacy and intimacy could also be viewed as inappropriate since people who have just met once or twice offline have a relationship that is primarily limited to monitoring each other's profile updates. In Bryant and Marmo's (2009) research, participants argue that they don't look at close friends' profiles as much as they do with those that are just acquaintances. The reason for this they suggest is because with their close friends they see them all the time and know what they are doing. Additionally, people might write to their casual friends or acquaintances instead of calling, which allows them to interact free of time constraints with appropriate expression. Not surprisingly, social networking sites such as Facebook have become extremely popular for relational maintenance particularly among all friend types providing users with an array of asynchronous and synchronous communication options (Lampe et al., 2006; Ellison et al., 2007). As discussed above, there is little research on the relationship between people's choice of synchronous/asynchronous communication and friends'

relational stage. Hence, this study will further illustrate whether this factor influences people switching platforms from one to another.

### **2.2.2.3 CMC with intimacy**

Intimacy means how connected people feel to someone. Baym (2010) asserts that “people express concern that our communication has become increasingly shallow” in the online world. As demonstrated by Bryant and Marmo (2009) participants in their study suggested “Facebook is an adequate stand-alone tool to maintain casual or acquaintance relationships yet cannot convey enough intimacy to maintain close relationships” (p.1). For many, the increased amount of “mediated interaction seems to threaten the sanctity of our personal relationships” (Baym, 2010).

However, some people argue that they become more intimate with friends when they have the opportunity of browsing others’ updates on social media at the same time sharing their own life. Anita and David (2013) state that the gratification of self-presentation is closely related to the gratification of relationship management and demonstrates that friends stay in touch with each other by following their social media and viewing posts. As is shown in one study conducted by Lenhart et al. (2009), more than 83% of the students stated that social media makes them feel better connected to friends via social media communication. It is also explained by Ledbetter (2015) that posting publicly visible on social media allows people to make self-presentations to a larger number of friends at the same time than to specific users while increasing intimacy among larger groups of social circles.

For many scholars, the use of online communication – text-based computer-mediated communication (CMC) such as email, post and chat systems – is positively correlated to significantly higher levels of intimacy compared to face to face interactions, owing to the psychological feeling of nearness, closeness and reciprocity norms (Farci et al., 2017) that contribute to a stable and healthy friendship. However, text-based communications lack much of the richness of contextual information. Liu et al. (2017) argue that nonverbal cues such as emotions are effective in helping users understand the meaning and nature of the message, and

therefore play a critical role in creating and sustaining intimate interactions and relationships indicated by Anderson and Guerrero (2006). Then later articles further illustrate that the emoji is probably the most popular form of digital expressions used by 2.3 trillion people in 2016, which help text message senders find a more comfortable and flexible way to express themselves (Tang & Hew, 2019; Liu et al., 2017).

Then another debate from Murphy's (2017) study shows that text-based communication still cannot deeply communicate emotion which helps manage the relationships between messages and meaning compared with video/audio communication. Walter and Ramirez (2009) demonstrate that friendships require rich media for simplicity. Therefore, video and audio talk allow people to communicate the emotional nuances that friendship needs, and they were predicted to displace email and instant messaging as preferred channels if not considering the high cost and accessibility as explained by Walter and Ramirez (2009). That is to say, intimacy which occurs in CMC may be a contradictory factor and few scholars in this field discuss whether this would influence people's choice of synchronous or asynchronous communication to maintain their friendship.

#### **2.2.2.4 CMC with geographical distance**

Ruppel et al. (2018) indicate that all of the high-speed ways of communication enable information to be circulated easily across distances. People who live far away from each other appear to live in the same place when it comes to mobility issues and this can result enormously in the instability of friendship. Before the Internet became a popular communication conduit, close to 90% of people reported having at least one close, long-distance friend (Rohlfing, 1995; Rohlfing & Healey, 1991). In long-distance communication, the Internet competes with the telephone. Dimmick et al. (2000) found that nearly half of their respondents reported a decline in long-distance phone calls since the advent of the Internet. Likewise, Chen et al. (2002) reported that email was more frequently used than the telephone in communicating with faraway friends in many countries around the world. However, Baym et al. (2004) argued that though the general impression is that CMC is more likely to be long-distance and telephoning is more likely to be local, comparisons of media use in geographically close and distant social circles indicated that telephone overrides Internet for both long-distance and geographically close relationships.

More recently, a Pew Internet and American Life Project (2002) on how college students are living with Internet reported that a majority of people especially college students use a variety of online communication tools to keep in touch with their far-flung friends. Besides, Wang and Andersen (2007) state that “CMC was found popular among friends geographically separated by a long distance, although the telephone was used most frequently among close friends” (p. 1). Moreover, Ledbetter (2015) indicates the importance of social network sites given that it helps to maintain a sense of mutual control by fostering opportunities for long-distance friends to locate their relationship within social networks sustained across distance. Furthermore, the increasing popularity of instant messaging and video chat, has made distance less of an issue in long-distance friendships. As a result, friends can communicate with each other more in emotional ways through these synchronous communications (Becker et al., 2009; Palmer & Herbert, 2016).

Clearly, most long-distance relationships must use some medium that transcends geographical barriers to achieve relational maintenance according to Stafford (2005), yet what type of CMC can solve friendships with distance problems is still essential to study.

#### **2.2.2.5 CMC with location and timing**

It appears that very few studies have hypothesized on location and timing that may influence Internet use on maintaining existing friendships. However, some scholars who I refer to next, have mentioned the characteristics of different CMC types in terms of location and timing, which might offer some clues. Location refers to the probable place (eg. school, home, street) dividing into public places and private places where the communicators are. Timing could be treated as the moment they communicate in a day or how much time they spend. These two factors may be concerns when people choose the communication method (synchronous or asynchronous) with friends.

Asynchronous communication contains opportunities for people to edit messages which are not offered by face-to-face (FTF) interactions, resulting in a lack of accidental information exchange according to Walter and

D'addario (2001). This 'exchange' may include inappropriate or unintended nonverbal expressions and physical cues suggested by McGlynn (2007). CMC interactions, then, allow communication to pay more attention to the text provided by the senders and not influenced by external distractions, internal noises and facial expressions offered by audio/video talk. In another way of understanding, the asynchronous nature, lack of nonverbal cues may occur anywhere whether at private places or public locations without time limits. Individual's attention capabilities are no longer limited by the environment around them which might result in unsatisfactory information exchange.

#### **2.2.2.6 CMC with friendship situation**

There are different situations that friends may find in their relationships. According to Guerrero and Chavez (2005), friendship maintenance is an ongoing process where partners must respond and adapt to the needs and goals of both individuals. It involves repairing and maintaining the relationship according to different friendship situations, for instance, the time people have conflicts with their friends and the time friends get along well with each other. People may adopt different online communication methods to repair or maintain their friendship.

A lot of scholars have argued that for young adults, friendship is a particularly valuable relationship given that young adults typically spend more time interacting with friends and try to resolve conflicts immediately compared with interacting with other types of relationships (McEwan et al., 2008). However, even for young adults, maintaining friendships may still be a fragile accomplishment owing to the fact that the nature of friendship is more voluntary than it is with other relationships, especially family or romantic relationships as claimed by Hays (1988). Besides, conflict may be one reason that influences a stable friendship among young adults (Johnson et al., 2004). As a result, the conflict management choices or even the online method people choose to communicate with their friends in particular may certainly have implications for the continuation or dissolution of young adult friendships.

Friendship uncertainty could be one common situation among university students. Muise et al. (2009) state that online monitoring behavior is associated with increased levels of relational uncertainty. This behavior is also identified as online surveillance for friendship maintaining properties from Bryant and Marmo's (2009) respondents. Muise et al. (2009) also found online monitoring as a relevant behavior for SNSs, which involves examining a friend's online interactions, looking through friends' social media updates and writing posts or comments. Utz and Beukeboom (2011) speculated that it is more socially acceptable to monitor an individual online than in-person, suggesting that this negative maintenance behavior might be a useful friendship maintenance strategy. On the one hand, using SNSs comments provides an outlet for friend communication and public display of the relationship, which might decrease uncertainty. On the other hand, browsing friends' social media updates would make people feel that they are experiencing the same story and the same place, which might increase closeness. And it is not difficult to conclude that this friendship maintenance behavior is completed through asynchronous communication.

Previous research also has established that young adults usually express preferences for written communication via mobile phones or computers under normal circumstances (Madell & Muncer, 2007; Thompson & Cupples, 2008). The reason for which may be that asynchronous text-based communication provides extra time to craft messages. Thus, individuals benefit from presenting themselves in more ideal ways without time limits as a result of organizing their thoughts before composing messages in text-based communication (Stafford & Hillyer, 2012).

However, the finding of communicating methods in different friendship situations is puzzling. Though previous research convincingly demonstrates the importance of asynchronous communications to friendship maintenance under normal circumstances, it remains unclear which kind of CMC people adopt to solve problems with friends.

Miczo et al. (2011) speculate that asynchronous text-based communication is valuable for individuals who want to restrict or regulate the number of interactions with some friends. More specifically, Dare (2007) pointed out that some people used text-based communication with a friendship that they felt not very comfortable with. Indeed, asynchronous communication could also be used to limit contact length if people are in the middle of other important cases or just do not desire an extended conversation. And then people can

selectively ignore messages by later on replying to friends that “I didn’t get your email/text”. Furthermore, Perry and Werner-Wilson (2011) demonstrate the added control of text-based CMC in finding that it can contribute to resolving arguments when friends have conflicts with each other. Text-based communication has more time delay than video/audio talk, which offers thoughts and opinions without interruptions and prevents raised voices or sarcastic tone as indicated by Stafford and Hillyer (2012).

While another debate has arisen, that synchronous communication may be more necessary for friendship situations such as conflicts. Walther and Tidwell (1995) found that response time to asynchronous communication such as email affects judgments that users have of others. A quick instant message or a FaceTime call can let trouble be dealt with immediately and people can express their emotional feelings without time delay or wrong interpretation. Friends are able to contact each other when they are most needed with conflicts.

#### **2.2.2.7 CMC with people’s background attributes**

More recently, scholars have investigated the relationship among different modes of CMC, communicating type among men and women (Houser et al., 2012), yet there is little literature discussing the interaction between background attributes (gender, education background and the time being in the certain country) and people’s choice among different types of media. Perhaps both men and women feel comfortable with typing relational messages to their significant others (Houser et al., 2012). This finding is further illustrated by Boneva et al. (2001) who suggest that women maintain relationships with friends and relatives more than in other types of relationships. Brehm (1992) also suggests that women engage in more intimate behaviours including expressing in emotional ways, whereas men’s friendships tend to be task-oriented and more straightforward. Therefore, according to the different communication purposes between men and women, they may like to use different communication methods (synchronous/asynchronous) to maintain their friendships in daily life. However, scholars have also been debating for years about the extent to which men and women are similar or different in maintaining friendship. Wang and Anderson (2007) indicate that men and women share fundamental similarities with small differences and the differences are even smaller in close relationships.

### **2.3 Chapter summary**

Although the scholarly literature above shows the different interests in understanding online friendships, my study contributes a particular focus on how university students maintain their pre-existing friendships through communication technology. Given that many university students are often separated from their long-term friends geographically, professionally and socially, I am interested in the effect of different factors on their choices between two types of interactions online for keeping in touch - synchronous and asynchronous communication. Because friendships can be maintained in a variety of ways (synchronous or asynchronous), they can provide insight into what factors contribute to patterns of communication in relationships. This research aims to address an under-researched aspect of online relationships through further investigation of key areas of efficiency, friends' relational stage, intimacy, geographical distance, location and timing, friendship situation and people's background attributes to determine whether these certain areas can influence their choices of communication method.

# CHAPTER THREE: METHODOLOGY

## 3.0 Introduction

The previous chapter reviewed the current scholarly literature on people's general media consumption on CMC and maintaining friendships with different types of CMC in relation to several specific factors. I now move on to the methodology chapter which introduces the design and method of the study to investigate university students use of digital communication platforms based on my hypothesis, using polymedia theory, that people switch between different platforms in their digital communications to maintain their friendships and the choice (whether synchronous and asynchronous) may be influenced by particular factors. Therefore, the design of my research which involved an online survey sought to answer the research questions:

**RQ1:** About media consumption/preference

What are the differences between university students' use of asynchronous and synchronous communication when it comes to maintaining existing friendships?

**RQ2:** Which of the following factors appear to contribute to students' different uses of communication when it comes to friendship maintenance?

(1. Efficiency 2. Friends' relational stage 3. Intimacy 4. Geographical distance 5. Location and timing 6. Friendship situation 7. People's background attributes)

In the following sections of this chapter I will describe the online survey, the participant selection, the analytical procedure and data reliability.

## 3.1 Data collection procedures

### 3.1.1 The survey

Given the limited scope and time available to conduct this research, particularly in accessing potential participants through an advertisement, I decided to focus on a specific sample, that is, university students living

in Auckland, New Zealand. This decision was made for logistical reasons. First, Auckland is the location of three universities and around 72,000 students ([www.universitiesnz.ac.nz](http://www.universitiesnz.ac.nz)), so this meant that my advertisement inviting participants for this study had a greater pool of students to draw from. Second, ethics approval for this study only allowed the physical placing of the advertisement inviting participants to be involved in the survey. As I was living in Auckland, I was able to access locations to place the advertisements where I knew students would see them such as cafes and libraries where the notice boards are available. The data for this research was gathered using an anonymous online survey using Qualtrics software which is commonly used by academics and made freely available through AUT for its researchers (staff and students). An online survey is considered to be an effective method for data collection because “more segments of society are using the Internet for communication and information” (Wright, 2005, p. 1) and for this type of research students can easily access the questionnaire via an online link (Wang and Anderson, 2007). In this survey there were 17 questions including 15 single choice questions and 2 open-ended questions aimed at obtaining results to the research questions. The types of questions included list of answers, agree or disagree with a statement, yes or no questions and open-ended questions which asked them about their reasons for a preferred method and their different use of communications based on friends’ relational stage. The survey questions covered content in terms of demographic information, choice of their preferred digital communication method to maintain friendships, their opinions about the importance of digital media and whether they switch between multiple methods and different factors or motivations which may affect their choices of communication methods for friendship maintenance(See Appendix 1 for the survey questions).

Getting participants to answer questions online is more efficient and less complicated than delivering a survey by post or by hand and the participants can remain anonymous to the researcher and others (Bryman, 2004). Brantley et al., (2014) demonstrate that all surveys, whether conducted online or offline, can be “prone to sampling bias whereby the sample that has been obtained may not be representative of the intended population” (p. 1). By recruiting online, people are clearly restricting their sample to those who have access to the internet- either through using a computer, tablet or smartphone. In addition, people don’t need to leave their names, which probably protects their privacy. Sue and Ritter (2007) also indicate that “online surveys provide promising opportunities in today’s technological world with more efficiency and productivity” (p. 1). Survey

questions also have advantages because they serve as a measurement tool, a way for researchers to discover a respondent's opinion, knowledge, and behavior (Sue and Ritter, 2007).

Analysis of anonymous online surveys has several advantages because the data collected has not been affected by any bias due to any direct involvement of the researcher with the participants in asking the questions; there has been no interviewer variability involving interviewers asking questions in a different order or different ways; and the participants will have been able to complete the survey questions in their own time and when they want to (Bryman, 2004).

### **3.1.2 Participant selection**

To recruit participants for the survey I created an advertisement (Appendix 2) which I put up at several universities in Auckland (three campuses of AUT, two campuses of Auckland University, Massey University and Otago city Campus). I also placed the advertisement at local cafes, libraries and other places where public noticeboards are available and where students would be likely to see them. The advertisement requested that the participants needed to have the following criteria: (i) they must be a student attending a university in Auckland; (ii) they must be over 18 years of age; (iii) they needed to have established friendships in face-to-face settings or online; (iv) they are users of different forms of computer-mediated communication to contact these existing friends. A link for potential participants to access was printed on the advertisement and also was featured as numerous 'tear-off' slips at the bottom so that potential participants could easily take a copy of the link with them. When using their computer, the participant clicks on the link which took them first to the information sheet where they were able to indicate whether or not they wished to participate in this survey. The link was available a month before I stopped seeking participants. Through this process, I did not select them based on gender or any other demographics but rather waited until I had a suitable number for my study.

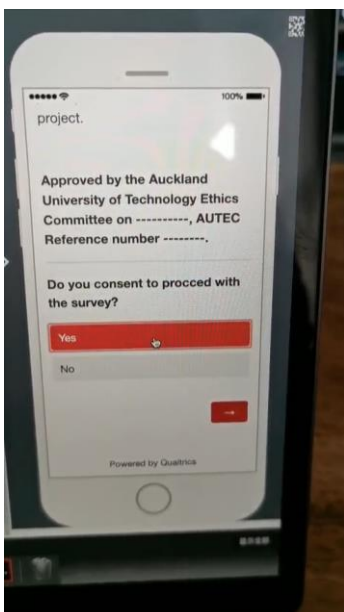
As this was an anonymous survey, the fact that the students did the survey indicated that they gave permission for their answers to be used for this study. No personal information such as contact details were required for this survey for confidentiality purposes which was a requirement of AUTECH.

When linking to the online survey, the potential participants were first presented with the Participant Information Sheet (see Appendix 3) to let them know about the purpose of this study. All they were required to do was complete a questionnaire without a time limit. They were told that they were able to withdraw from answering the questions at any time if they wished. The researcher would never know their private information because it is an anonymous survey. After reading and understanding the information sheet, participants gave their consent by completing the questionnaire. The participants' identities are anonymous and not accessible by the researcher, her supervisor or anyone at AUT. Therefore, no contact details were collected. As a result of which, participants are therefore protected from deceit, harm and coercion, their privacy is protected and no power imbalances or cultural or other diversity aspects would be affected. All of the statistical data was kept in a locked room in the School of Language and Culture at AUT. As a result, the identity of all participants remained confidential.

If the participants agreed, the survey then appeared on the screen for them to complete. See Figure 1 and Figure 2 for examples of what the online survey looked like when accessed through a mobile phone.

**Figure 1**

*Sample screenshots of participant information once the link to the survey has been clicked*



**Figure 2**

*Sample screenshots of excerpts of some of the survey questions*



A total of 84 people took part in this study which was accessible over a period of 3-4 weeks because of the limited time for this study. However, 24 of these participants did not complete the survey questions so needed to be deleted from the study. This left me with a sample of 60 participants. Although I only had limited time to get student participants, I was able to achieve a sample of 60 university students within 3 weeks. The Qualtrics software was used to process the statistical data. I then analyzed the data to identify findings of university students' use of digital communication methods.

Before I was able to proceed with this research it was necessary for me to apply for ethics approval from the Auckland University of Technology ethics committee (AUTEC). Approval was granted for the survey following the submission of my study design as described above along with the documents of the advertisement, the participant information sheet and the survey. (See Appendix 4 for a copy of AUTEC's approval letter) Privacy and confidentiality are respected throughout the research process based on the ethical rules issued by AUT University.

### 3.2 Analytical procedures

As indicated earlier, the data from the survey questions involved both quantitative and qualitative analysis. I took a positivist methodological approach, in that my survey gathered quantifiable data that “leads to statistical analysis” (Research Methodology, n.d.). Positivism refers to the philosophical theory or worldview which is defined as “a general philosophical orientation about the world and the nature of research that a researcher brings to a study” in the research context (Creswell, 2014, p. 6). According to Aliaga and Gunderson, quantitative research is ‘explaining phenomena by collecting numerical data that are analyzed using mathematically based methods (in particular statistics)’ (as cited in Muijs, 2004, P. 1). Furthermore, as demonstrated by Watson (2015), quantitative research involves “measurement and assumes that the phenomena under study can be measured” (p. 1). In this case, the phenomena concerned the ways in which university students maintain their existing friendships using digital technologies for communication.

The data from the online survey were statistically analyzed using a Qualtrics function. It allows all the data to be generated into summative graphs easily. It would then let researchers dig deep into analysis, identify trends and produce predictive models. Crosstabs analysis also can be performed using Qualtrics for multivariate analysis (i.e., analyzing two or more variables at a time) while calculating p-value, Chi-square and T-test stats. There are also some functions for qualitative analysis while generating various widgets that give insight into text analysis. For example, a constellation chart could display the frequency with which certain terms appeared in all the responses. Dots in the constellation get larger as the term appear more frequently which can be used for obtaining key words.

The analysis of the data in this research enabled descriptive statistics to emerge that identify patterns/trends in the usage of digital communication methods by a specific cohort of university students in Auckland. Although descriptive statistics simply describe what is “going on in the data” (Trochim, 2006), they can contribute to new knowledge that can inform further research in a particular area. The descriptive statistical results also offer information about the mean, standard deviation, standard error and confidence interval for the categorical variables related to each of the background attributes.

Quantitative research focuses on statistical information which sometimes offers only one-dimensional findings. But, according to Austin and Sutton (2015), qualitative research focuses more on participants’ thoughts and in this way researchers can better understand the potential meanings of what they say. Therefore, in this survey I

included two open ended questions which required qualitative analysis (see survey questions 6 and 12 in Appendix 1). These questions are both concerned with the reasons about their decision-making based on their media preference generally and their different use of communication methods in terms of certain factors (friends' relational stage). In analyzing the answers to these questions through a close reading I was particularly interested to see where students' answers expressed commonality in their use of words and reasoning. Using qualitative analysis on the text information can further illustrate participants' feelings and the reasons attached to their decision-making to compensate for the one-dimensionality of quantitative data (Dörnyei, 2007).

### **3.3 Chapter summary**

In summary, this chapter has outlined the design and method of my study. I explained the quantitative methodological approach and the qualitative analysis mainly for two open-ended questions. After that, the data collection procedure was introduced including the survey, participants selection and ethic approval for an advertisement recruiting participants over several universities in Auckland. The answers from a sample of 60 participants provided the data for analysis. The research instrument through this process is an online questionnaire which captures the participants' perceptions about maintaining a friendship with different types of CMC under several factors. Next, the data analysis procedure was discussed. The following chapters will discuss the results of the data analysis.

# CHAPTER FOUR: FINDINGS

## 4.0 Introduction

In this chapter I present the findings from the survey data collected from the 60 university students in Auckland who agreed to participate in this research. The questionnaire contained 17 questions – the first four which requested demographic information to understand the make up of my sample (Q1-Q4) and then the remaining questions relating to participants' digital media use and their attitudes and motivations to using digital media to maintain their existing friendships (Q5-Q17).

In the first section of this chapter (4.1) I present the demographic information about the students to provide an overview of my sample. This is then followed by sections 4.2 and 4.3 where I look at the results relating to participants' use of digital media for communicative purposes and then at the attitudes and motivations about their media use for the purpose of friendship maintenance. I look at participants' responses to individual questions as well as conduct a crosstab analysis showing the relationship between background attributes and participants' preference of communication methods.

These findings will then be discussed in relation to each of my research questions:

**RQ1:** About media consumption/preference

What are the differences between university students' use of asynchronous and synchronous communication when it comes to maintaining existing friendships?

**RQ2:** Which of the following factors appear to contribute to students' different uses of communication when it comes to friendship maintenance?

(1. Efficiency 2. Friends' relational stage 3. Intimacy 4. Geographical distance 5. Location and timing 6. Friendship situation 7. People's background attributes)

## **4.1 Demographics of participants**

In this section I outline the demographics of the 60 participants who elected to complete the online anonymous survey. They responded to the advertisement that I had placed at various locations around Auckland and accessed the survey through the url (online link) which was included in the information I provided.

The demographics of this working sample based on the responses to survey questions 1-4 are the following.

### **Gender -**

The sample was dominated by people who identified as female. That is, 38 participants which is around two thirds of the sample. Twenty-one were male which is approximately one third, while one person identified as 'other'.

### **Student status – (international or domestic/studying for an undergraduate or postgraduate degree)**

When it came to a division as to whether the participants were international or domestic students, the numbers were also relatively close at 32 and 28 respectively. Those students who were conducting postgraduate study numbered 34, which was slightly higher than that of undergraduate students at 26.

### **Time in Auckland**

When asked about the time spent living in Auckland, the majority of participants (87%) had lived there for over a year. Twenty-nine of the participants had lived in Auckland between 1-3 years and 23 participants had spent over 3 years there. For the participants living from 1- 3 years most were postgraduate students, while those who had been living in Auckland over 3 years were mostly undergraduate students.

Overall this sample was dominated by female participants but had an almost even split between international and domestic students from universities in Auckland. The majority of the students had lived between 1-3 years in Auckland. While it was not possible to obtain a representative sample of university students living in Auckland, it still provides opportunities to gather insights into students' digital media use when maintaining friendships which becomes clearer later in this chapter.

## **4.2 Media use and relationship findings**

In this section I present the findings in response to those questions which give an idea of participants' use of digital media for the purpose of friendship maintenance and the attitudes and motivations of participants in: (i) their attitudes towards digital media, their media consumption behavior and their preference for different types of digital media devices/platforms for communication purposes; and (ii) their attitudes and motivations about the maintenance of friendships that might affect their decision-making about which form of digital communication method to use.

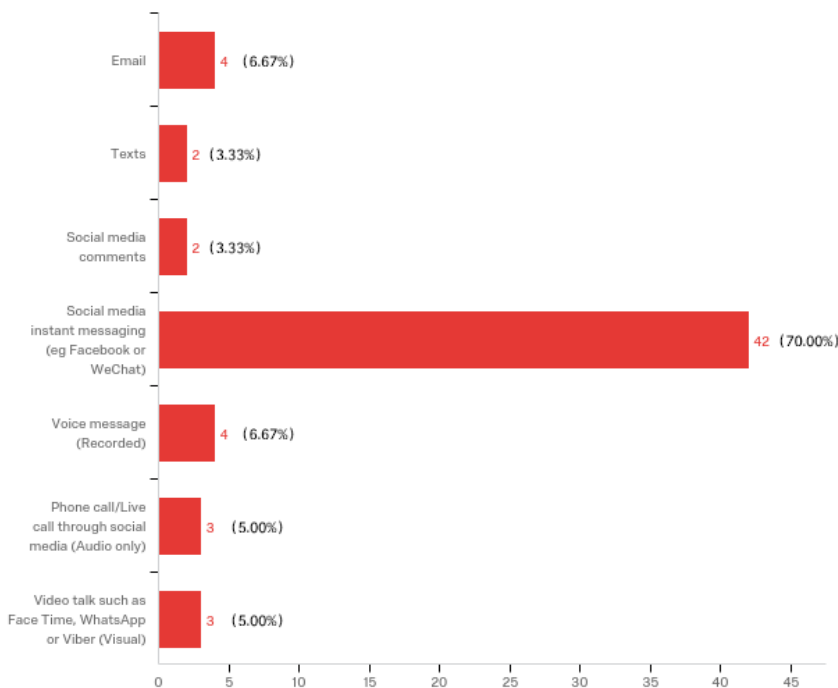
### **4.2.1 Media consumption and preference for either synchronous or asynchronous communication**

#### **(RQ1)**

This section introduces the findings from four survey questions about participants' preference for digital communication methods to maintain their friendships, media consumption and attitudes towards digital media. They relate to their preferred digital communication methods, whether they switch between methods, their attitudes towards digital media in general and if multiple communication methods help with their friendship management. I was interested first to understand whether they used different methods or whether they were focused on one specifically – and whether this was asynchronous or synchronous use. Then it is followed by the importance of digital media they think in general and if multiple choices of communication methods help them maintain their friendship.

**Figure 3**

*Please indicate the method you prefer to use when it comes to maintaining contact with friends. (survey question 5)*



As can be seen in Figure 3, when it came to participants' responses about their preferred method in maintaining contact with friends, the majority (70%) stated social media instant messaging as their answer. This finding was well above all of the other forms of communication which ranged from email and voice message at just under 7% to texts and social media comments at just over 3% of participants. Audio call and Visual call are popular means of communication but only 5% participants chose these two methods respectively as their preference. Social media instant messaging as a form of synchronous communication was distinctly more popular than other forms of digital communication such as email, texts, social media comments and recorded voice message which are asynchronous.

**Figure 4**

*Do you switch between various digital communication methods? (survey question 10)*

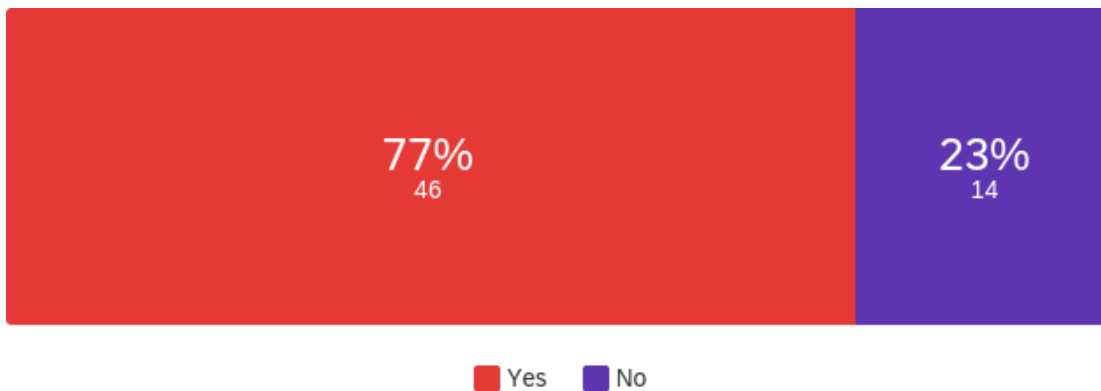
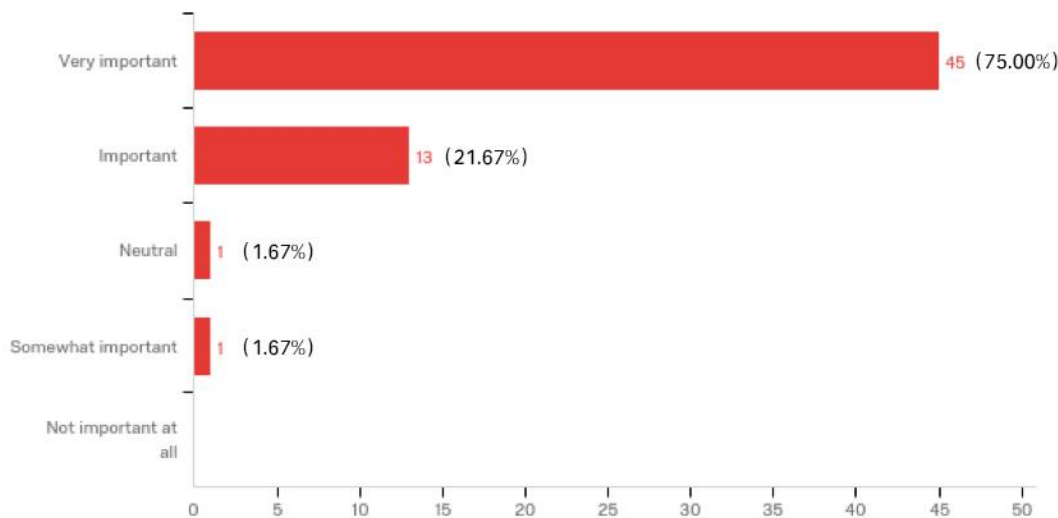


Figure 4 above shows how many university students switched between various digital communication methods when it came to maintaining friendships. The total percentage of people who chose to switch between methods reached 77% as shown in Figure 4, which is more than three times the number of students who didn't choose to communicate in a variety of digital ways. In general, based on this data, university students may be more likely to switch among different digital communication methods instead of only using one particular method.

**Figure 5**

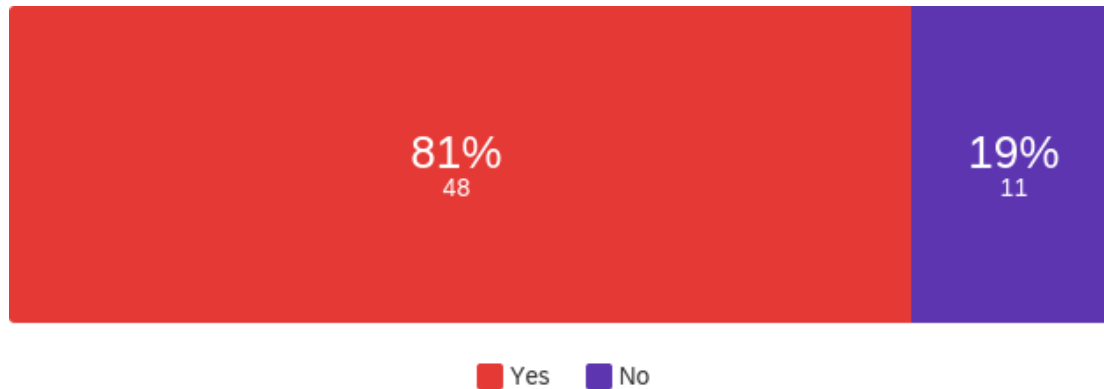
*How important are the internet and digital devices to you when it comes to keeping contact with existing friends? (survey question 9)*



When it came to asking about the importance placed on the internet and digital devices for keeping in contact with existing friends, the majority of participants indicated that this was significant. In fact, three quarters of participants (75%) said this was ‘very important’ while 13 participants (22%) said it was ‘important’. It was interesting that no participants stated digital means as not having any importance which suggests that they rely on digital technology for communication in these circumstances of friendship. In fact, it suggests that this type of communication has become a normal part of their lives. The reason for this trend may involve the recognition that people have busy lifestyles without much time to maintain their friendships through face to face communications.

**Figure 6**

*Do you feel that having multiple forms of digital communication helps to maintain your existing friendships? (survey question 13)*



As Figure 6 shows, 81% of the university students felt having a choice of different digital methods helped them to maintain their friendships. Although this was the majority of the participants, it was still interesting that just under a quarter (19%) did not feel that digital communication helped them to maintain their friendships. This suggests that they might still enjoy face to face contact with friends or socializing in person, even though they had access to digital communication methods.

#### **4.2.2 Attitude and motivational factors in digital communication choice (RQ2)**

This section looks at the different motivational or emotional factors which might influence students' preference of communication methods for friendship maintenance. These relate to seven of the survey questions which asked the participants questions on their opinions or feelings relating to the topic under study. Discussion of the survey questions are grouped under the headings of friends' relational stage (4.2.2.1), intimacy (4.2.2.2), geographical distance (4.2.2.3), friends' situation (4.2.2.4) and location and timing (4.2.2.5). Other two factors (efficiency and background attributes) will be illustrated in the crosstab and qualitative research sections.

#### 4.2.2.1 Friends' relational stage

**Figure 7**

*People tend to use specific communication methods with particular groups of friends as it depends on the person such as whether they are a best friend, close friend in my social circle or someone I am friends with but am not close to. What kind of online communication method do you use with these different groups? (survey question 11)*

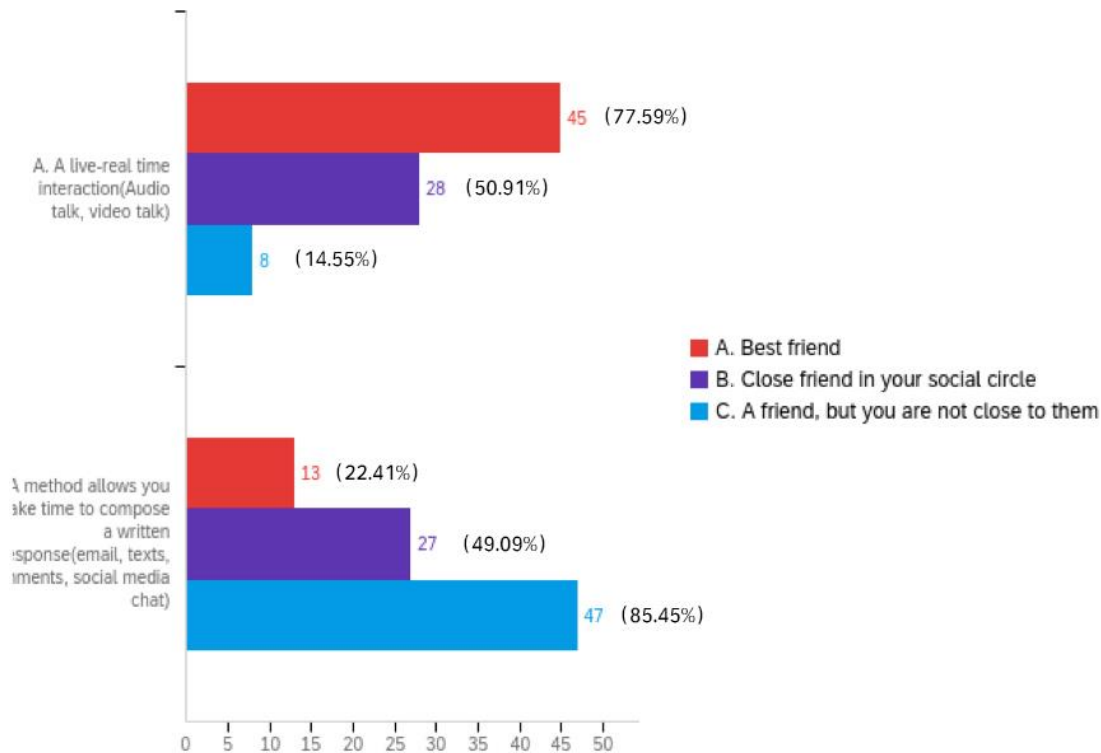


Figure 7 shows students' choice of the online communication method they use with different groups in terms of their relationships with them, that is, whether they are a best friend, close friend in their social circle, or someone they are friendly with but not close to.

The communication methods being analyzed are divided into two types. The first, (at the top of the graph) is synchronous, that is, a live-real time interaction such as audio talk and video talk. The second group of communication methods is not in real time but enables time to be spent when it comes to composing a written message such as email, texts, comments or social media chat. As can be seen in Figure 7, when it comes to contact with best friends, 78% of the participants used a synchronous time interaction. Conversely, for friends who are not so close, 85% of the participants use asynchronous methods which allowed them to spend time

composing a written response instead of live-real time interaction. In addition, when people in the middle range, those who are close friends but just within their social circle, the number of people choosing both synchronous and asynchronous methods was nearly the same, respectively at 51% (live-real time interaction) and 49% (take time to compose written response). Therefore, it appears that relational stage may affect students' choice of communication methods with friends depending on how close they are. This data shows real-time interaction is more popular among best friends for maintaining friendship, those who are friendly within their social circles use both methods, and then those who are less close use asynchronous communication methods. These findings probably relate to how comfortable a person feels in their relationship with another.

#### 4.2.2.2 Intimacy

**Figure 8**

*Please indicate your level of agreement with the following statements: I feel more connected with my friends when I can see or hear them through a digital method such as FaceTime. (survey question 16)*

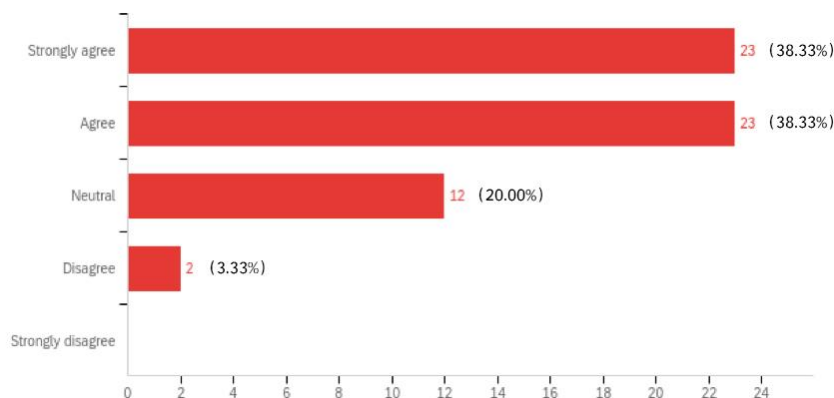


Figure 8 above presents the participant responses about whether they agreed with the statement that they felt more connected with their friends when they could see or hear them through a digital method such as FaceTime. The data shows that the choice of “strongly agree” (38%) and “agree” (38%) when added together accounted for the largest proportion among all the options. That is 76% felt more connected with their friends using a synchronous communication method. Very few people, that is 2 - disagreed. Around 20% were neutral and did not indicate whether they agreed or not which might indicate that they did not really have an opinion on this or perhaps did not think it was an important consideration about friendships.

When viewing these findings overall one might conclude that the strong support for synchronous communication might relate to the fact that audio/video talk involves the senses of sight and sound. Understanding a person's tone of voice or body language might be easier than trying to decipher the meaning of non-verbal communication through digital means such as text, image or an emoji or emoticon. Expressing emotional feelings instead of typing words the risk of misunderstanding or even misinterpretation might be easier (Tang & Hew, 2019).

**Figure 9**

*Please indicate your level of agreement with the following statements: Having new friendships online affects the time I have available to maintain my older friendships. (survey question 16)*

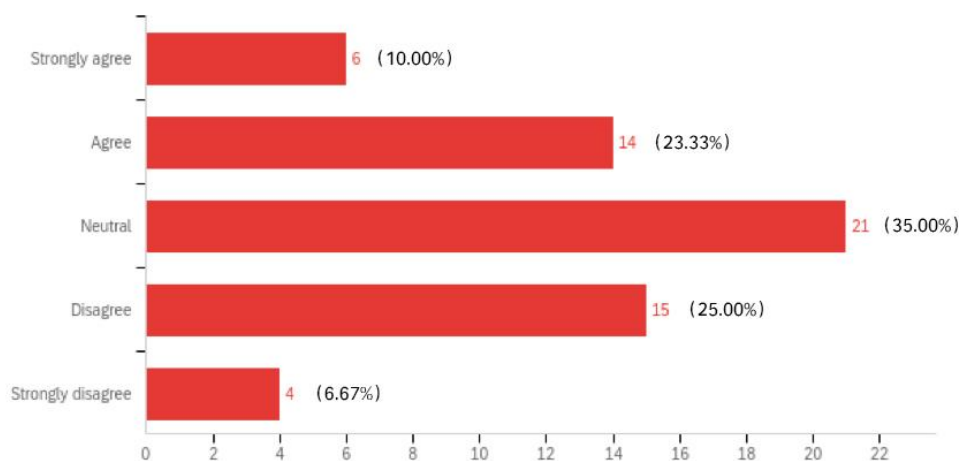


Figure 9 above shows different responses about whether having new friendships online affects the time students have available to maintain their older friendships. The data shows different opinions. Around one third of the participants either disagreed or strongly disagreed with this statement which suggests that they were able to give time to both new and older friendships, while the remaining third either agreed or agreed strongly that the new online friendships did impact on their relationships with their older existing friendships. It may be that digital communications meant that they had many more friends to keep in contact with because they were easily accessible, so managing more friendships might become more demanding on an individual. Interestingly here, the students choosing “neutral” also around one third of the participants - which might be interpreted as them not having an opinion on this statement, or maybe they did not have any sense or knowledge about the time they spent on maintaining friendships and therefore could not answer the question. Equally, they may not have understood the question.

#### 4.2.2.3 Geographical distance

**Figure 10**

*Which of the following communication methods are you most likely to use to contact friends who live a considerable distance from you eg another city or country? (survey question 7)*

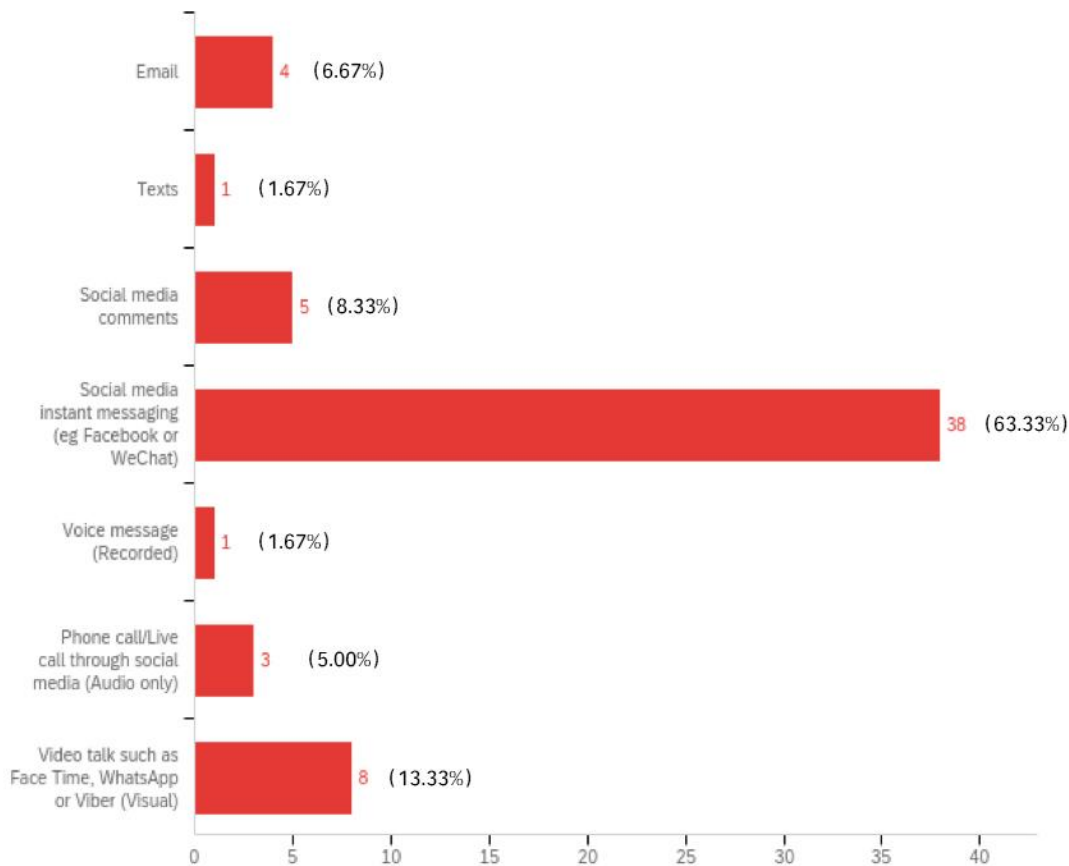


Figure 10 above shows the data concerning communication methods students were most likely to use to contact friends who live a considerable distance from them eg another city or country. More than half of the 60 students (63%) chose social media instant messaging as their preferred method to maintain friends who lived far from them. This stood out from the rest of the responses which were scattered between the remaining options – the next largest being 13% of the respondents opting to use synchronous communication of video talk. That is, social media instant messaging was still the most popular method among various kinds of computer-mediated communication with regard to factors such as geographical distances (compared with Figure 3). However, the number of people choosing “video talk” considering far distances shows an upward trend (13%) compared

with that of people choosing “video talk” normally as their preference (see Figure 3). It is probably because people may be more eager to see their friends by getting emotional contacts when they are far from each other without real time communications. The number of people choosing social media comments, Email and audio talk are similar, at respectively 8%, 7% and 5%. Texts and voice message (recorded) are both the least favored response, with each only 1 (2%) student chose it. As a result of which, when considering long distances among friends, most students still chose text-based synchronous methods of “social media instant messaging” as usual to maintain friendships with people further away. It is possible that this might have something to do with time zones and people being conscious that people might be asleep overseas when New Zealanders in the southern hemisphere are awake. But some people seem to change the method they used and switched to video talk as a live real synchronous communication to maintain friendship. Therefore, this suggests that participants mostly use synchronous communications when they maintain their friendships far away and live-real types of communications (video talk) even increased more than usual.

**Figure 11**

*Which of the following communication methods are you most likely to use to contact friends who lives close to you? (survey question 8)*

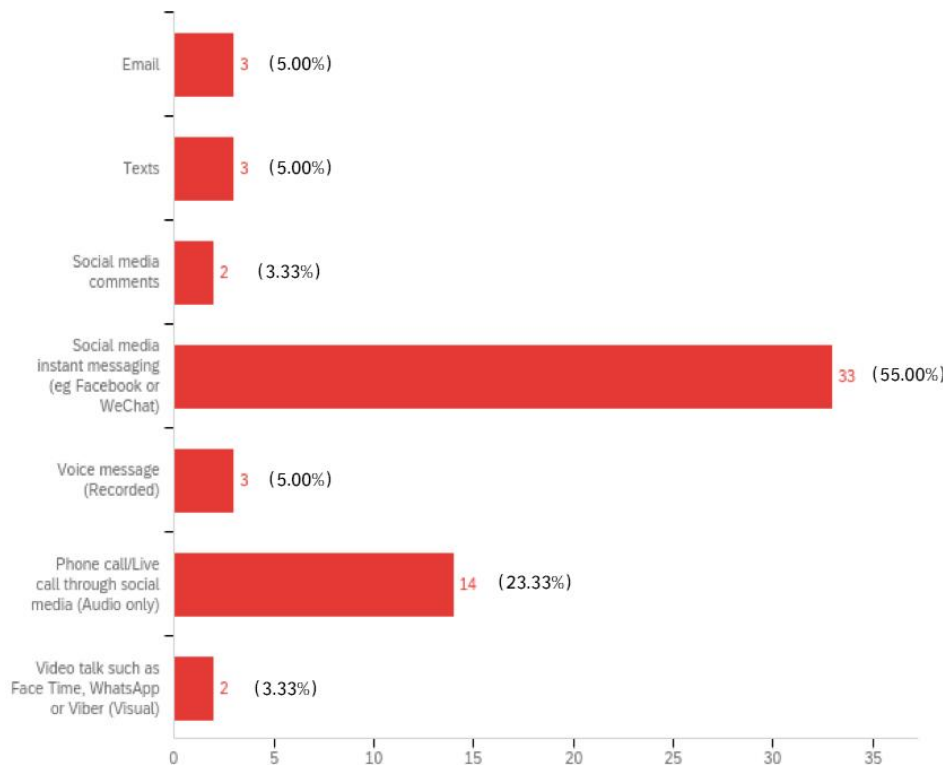


Figure 11 above however showed some similar responses to the previous question even though this time it was about keeping in contact with people who lived close to them. Social media instant messaging was still the most commonly used form of communication for maintaining friendships for around half the respondents. However, the live phone call through social media stood out at 23% of participants which is vastly different from the 5% in the previous graph, which again may suggest that people felt more comfortable live calling someone in their time zone than someone who was overseas. So, the two most popular communication methods related to both synchronous and asynchronous communication. The percentage of people choosing any of the other options were also all nearly 5%.

#### 4.2.2.4 Location and timing

**Figure 12**

*Which of the following reasons below do you consider when deciding which form of digital communication to use with your existing friend to maintain a friendship? (survey question 14)*

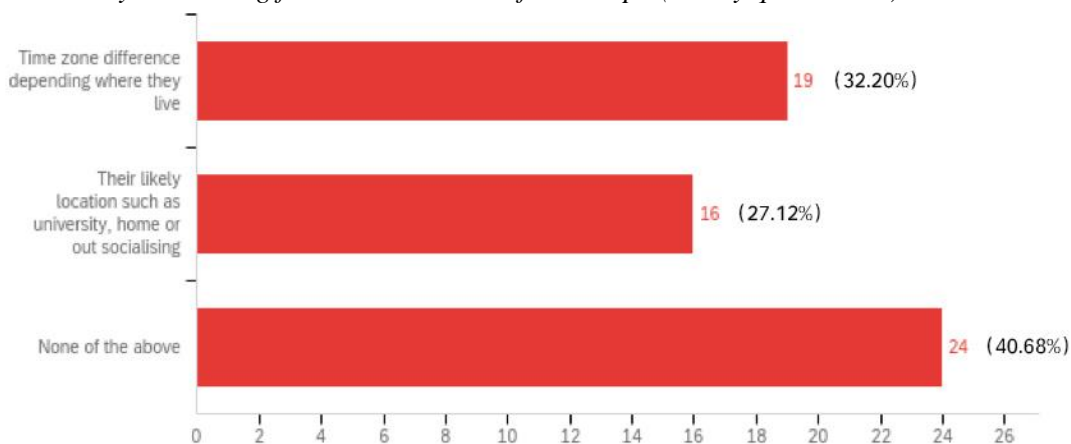


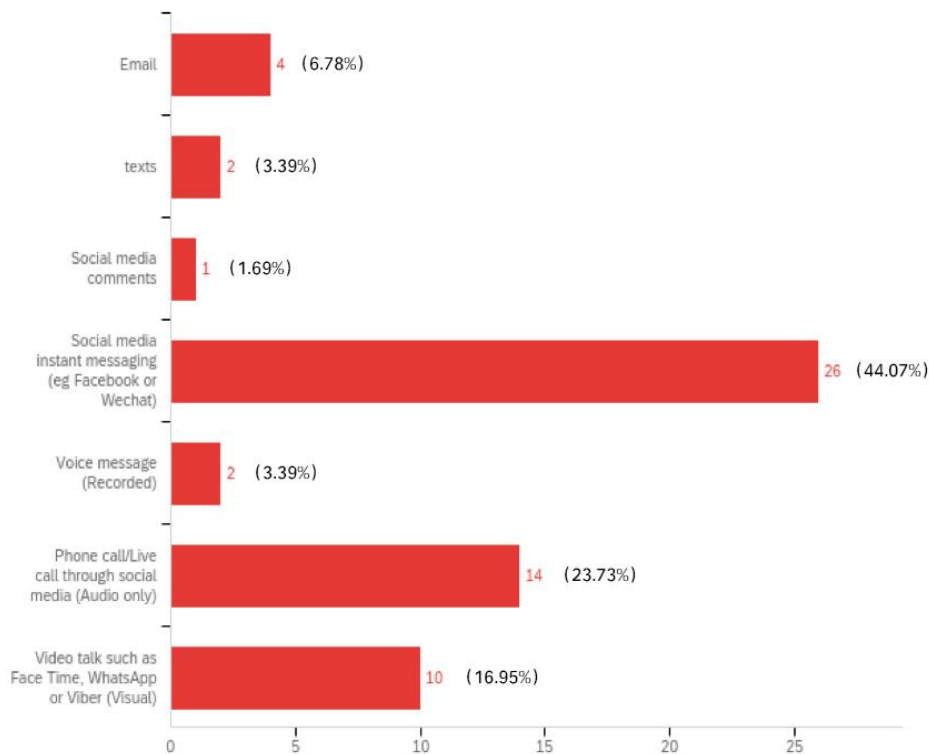
Figure 12 above shows the results of the reasons students said they considered when deciding which form of digital communication to use with their existing friends to maintain a friendship. The reasons offered in the question were time difference in a day or the likely location of their friend, or neither of these options. Surprisingly, the number of people choosing “none of the reasons above” accounted for the largest proportion of all participants (41%). This suggests that either they did not think it important or relevant to consider any of these reasons., or that there were other reasons for deciding when to contact friends which were not covered

in this question. However, the fact that 32% of participants did state “specific time in a day” and 27% said “their likely locations” still indicates that 60% of people in the sample were valid reasons in deciding on their communication methods

#### 4.2.2.5 Friendship situation

**Figure 13**

*When you wish to solve a personal problem with an existing friend by using a digital form of communication, which one are you most likely to use in the first instance? (survey question 15)*



When it came to selecting communication methods used for helping an existing friend to solve a personal problem, Figure 13 shows some interesting changes in the data compared with geographical distance. Forty four percent of the students indicated they still used social media instant messaging as their first option, followed by audio talk and video talk at respectively 24% and 17%. The people choosing social media comments accounted for the smallest proportion at a percentage of 2%. Likewise, only a very few people used texts as their first option (3%), which is the same as people choosing recorded voice message (3%). Those choosing email constituted a larger proportion than other asynchronous communications at a percentage of 7.

Although social media instant messaging dominates this graph and is an example of asynchronous communication, it is still noticeable that synchronous communication methods of a live phone call and video talk – together amount to almost 40% of the participants. So clearly these forms of instantaneous communication were also considered very important when helping a friend solve a problem. It may be that such methods help people express themselves more in an emotional way, are more persuasive when trying to help a person, and also provide immediate contact with friends particularly if they are worrying about them. It seems that friendship situations such as emergencies or conflicts may influence students' choice of communication methods with their existing friends in order to solve personal problems in the first place.

#### **4.3 Crosstab-data (RQ2 background attributes)**

In this section, I sought to get a better understanding of the relationship between the student participants' background attributes and their use of communication methods through a cross tabulation of the data. According to Bryman and Cramer (2001, p. 159), "crosstabulation is one of the simplest and most frequently used ways of demonstrating the presence or absence of a relationship". Background attributes refer to factors which might contribute to students' different use of communication methods. There are four background attributes to consider: gender, international or domestic student, undergraduate or postgraduate student and the length of time living in Auckland.

As the participant sample was relatively small and this was likely to impact on the information provided from the cross tabulation, it was necessary to do a Fisher's exact test of independence to see if there was any statistical significance. A Fisher's exact test is useful when there is a small sample size and there are two nominal variables that you wish to examine "to see whether the proportions of one variable are different depending on the value of the other variable" (McDonald, 2009, p. 70). Although this test established that there was no statistically significant pattern, more data would be required to demonstrate whether any patterns were not due to random chance. Nevertheless, there are some observations that can be made from the cross-tabulations.

### 4.3.1 Gender and preference for digital media communication method

**Table 1**

*Cross tabulation results of gender and digital media preference for maintaining contact with friends.*

	Total	Female	Male	other
Email	4	2	2	0
Phone call/Live call through social media (Audio only)	3	0	3	0
Social media comments	2	2	0	0
Social media instant messaging	42	27	14	1
Texts	2	2	0	0
Video talk such as Face Time, WhatsApp or Viber (Visual)	3	2	1	0
Voice message (Recorded)	4	3	1	0
Total Count	60	38	21	1

Table 1 compares the different genders and their communication method preference when it comes to maintaining contact with friends. From the Table, it can be seen that there was little difference in these preferences with the majority of both men and women preferring to use social media instant messaging. The numbers using the other forms of communication are too small to have any significance

**Table 2**

*Cross tabulation results of gender and their choices of whether switching between communication methods or not.*

	Total	Female	Male	Other
No	14	12	2	0
Yes	46	26	19	1
Total Count	60	38	21	1

Table 2 shows the number of both females and males who indicated whether they switched between various digital communication methods to maintain their friendships. The majority of males in the sample said they switched between methods, while just under half of the females were less likely to switch.

#### 4.3.2 International or domestic

**Table 3**

*Cross tabulation results of students' status (international or not) and digital media preference for maintaining contact with friends.*

	Total	Domestic	International
Email	4	3	1
Phone call/Live call through social media (Audio only)	3	0	3
Social media comments	2	2	0
Social media instant messaging	42	16	26
Texts	2	1	1
Video talk such as Face Time, WhatsApp or Viber (Visual)	3	1	2
Voice message (Recorded)	4	3	1
Total Count	60	26	34

When it came to looking at whether there were any differences between international and domestic students and their use of digital communication for maintaining friendships, Table 3 indicates very little difference. Both international and domestic students preferred social media instant messaging. Although the numbers are small when looking at the other methods, international students gravitated towards synchronous methods such as video talk and live phone calls, which is not surprising when they may have numerous friends in their home countries who they like to maintain contact with. In contrast, emails and social media comments (asynchronous communication) were next in line for domestic students in the preference for communication –

so they seemed less concerned with instant communication possibly because their existing friends might live locally in New Zealand.

For international students, social media instant messaging (76.5%) is still the most popular communication method. The number of international participants who prefer to use phone call or live call made up 8.8% of the international students, followed by those who chose video talk at a percentage of 5.9. The international participants who chose email, texts and voice message (recorded) accounted for a same proportion of the people, at respectively 2.9%. However, none of the international students chose social media comments as their preferred method.

**Table 4**

*Cross tabulation results of students' status (international or not) and if factor such as location and timing would affect their use of communication methods for maintaining friendship.*

	Total	Domestic	International
Location	16	10	6
Time	19	9	10
None of the above	24	7	17
Total Count	59	26	33

Table 4 shows that just over half of the international participants were not concerned about location and time factors as reasons for choosing certain communication methods to maintain friendship. However, time was a factor for about one third of them., and location only concerned about a fifth of the international students. Interestingly more than half of the domestic students said they did consider location or time. It is possible that this might signal a cultural difference between New Zealand students and international students – though there is not enough evidence in this survey to support this or explore it further. Because the majority of the international students stated that none of the above reasons applied suggests that there could be other reasons

that we are unable to ascertain from this survey and that future questions in a similar study might need to provide more options to look at.

#### 4.3.3 University qualification

**Table 5**

*Cross tabulation results of students' status (university qualification) and digital media preference for maintaining contact with friends.*

	Total	Postgraduate degree	Undergraduate degree or diploma
Email	4	0	4
Phone call/Live call through social media (Audio only)	3	1	2
Social media comments	2	1	1
Social media instant messaging	42	27	15
Texts	2	1	1
Video talk such as Face Time, WhatsApp or Viber (Visual)	3	2	1
Voice message (Recorded)	4	2	2
Total Count	60	34	26

As can be seen in this Table 5, whether a student was studying an undergraduate or a postgraduate degree or diploma, the majority of participants in both these groups chose social media instant messaging as their dominant form of communication method for maintaining their friendships. The majority of postgraduate participants (79%) preferred to use social media instant message to maintain their friendships, compared with 58% of undergraduate participants which is smaller than that of postgraduate students. It was interesting to see that four of the undergraduate students used email compared with none of the postgraduate students.

Compared with postgraduate students, undergraduate participants had a slightly larger percentage of people who were in favor of voice message (recorded) and phone call or live call. It may be that these participants

considered voice interaction (whether synchronous or not) as important for friendship maintenance. Overall, we can see that there are slight differences between the choices of digital communication methods for friendship maintenance between international students or domestic students other than social media instant messaging.

#### 4.3.4 Length of time living in Auckland

**Table 6**

*Cross tabulation results of participants' length of time living in Auckland and digital media preference for maintaining contact with friends.*

	Total	1-3 months	4-12 months	1 year-3 years	Over 3 years
Email	4	0	0	1	3
Phone call/Live call through social media (Audio only)	3	0	0	2	1
Social media comments	2	1	0	0	1
Social media instant messaging	42	2	3	22	15
Texts	2	0	0	1	1
Video talk such as Face Time, WhatsApp or Viber (Visual)	3	1	0	1	1
Voice message (Recorded)	4	0	0	3	1
Total Count	60	4	3	30	23

As is shown in Table 6, participants who preferred to use social media instant messaging to maintain their friendships were mainly those who lived in Auckland the longest – that is, more than one year. In fact, 22 of the participants (73%) who lived in Auckland from one to three years indicated this preference, while 15 participants (65%) who were in Auckland for more than three years did the same. However, it is important to note that for those seven students who had lived in Auckland for the shortest amount of time – between one

month to one year - none of them used texts, phone calls or voice recorded messages. However, they only represented 12% of the total sample so it would be difficult to make any generalizations about this.

All in all, Table 6 shows that the length of time participants lived in Auckland determined their different choice of preferred communication method for maintaining their friendships. The variables of 1-3 months, and 4-12 months should be discounted due to the low number of participants in these groups. For the people living over 1 year, the graph does suggest that email is more popular in the students who have been living over 3 years in Auckland. The longer time participants lived in Auckland, the less possible they were interested in social media instant messaging. Additionally, the voice message (recorded) also has more supporters who have lived from 1 year to 3 years.

**Table 7**

*Cross tabulation results of participants' length of time living in Auckland and whether they switch between communication methods or not.*

	Total	1-3 months	4-12 months	1 year-3 years	Over 3 years
No	14	1	0	10	3
Yes	46	3	3	20	20
Total Count	60	4	3	30	23

Table 7 indicates the relationship between participants' length of time living in Auckland and whether they switch between various digital communication methods. As indicated in Table 7, the participants who had lived in Auckland the longest (over three years) said they switched between methods (87%) of people in this group. Equally, 20 participants in the 1-3 year group (67% of them) also switched between methods to maintain their friendship. Although the number of participants living over 3 years (23) accounted for a smaller number of participants compared with the 1 year-3 years group (30), those living in Auckland for 3 years or more still had a larger proportion in their group who switch between methods which is surprising. It was interesting that

10 of the participants who lived in Auckland for three years or less did not switch – this is 33% of the total sample. Reasons they may not switch might be because they may be concentrating on forming additional relationships in a new location. Regardless, this data indicates that the majority do switch communication methods to maintain their friendships.

#### **4.4 Open ended questions on preference of communication methods**

There were two open-ended questions in the survey which gave the opportunity for participants to make their own comments about their preference for digital communication methods. The findings here relate to the efficiency of different methods for communication purposes as well as the particular relationships they had. (It is important to note that a number of participants did not write full sentences but often gave one word or very short answers. The information in the tables below refers to exactly what participants wrote.)

##### **4.4.1 Efficiency (RQ2 related)**

*Please indicate the reason behind your answer to the question - Please indicate the method you prefer to use when it comes to maintaining contact with friends. (survey question 6)*

This question asked participants their reasons for the preferred communication method that they had selected. I was interested to read what participants wrote using their own words to explain their choices as this enabled the inclusion of qualitative analysis of the data that provides insights into their reasons for method selection. Two thirds of participants (41 out of 60) answered this question and following a close reading of the answers it was noticeable that many of their reasons related to the efficiency of methods. That is, how convenient or effective the method was when it came to maintaining their relationships. There were a number of words that were repeated by different participants in particular that signaled this.

A group of key words stood out in the participant answers because they appeared frequently. They were “convenience/ convenient” (19 times), “efficiency/efficient” (3 times) and “instantly” (1 time) and the examples appear in Table 8 below. The words relating to convenience which means “anything that saves or simplifies work, adds to one's ease or comfort” (<https://www.dictionary.com/browse/convenience>, n.d.) were the most commonly used by participants. In three cases a form of convenience was preceded by the word ‘more’ or ‘most’ to indicate that the method had a higher level of convenience than other methods of communication.

Four participants used efficient- “efficiency/efficient” and “instantly” in conjunction with “convenience” (examples 7, 12, 17, 20 answers below). ‘Efficiency’ in this comment related to the quality of communicating with friends with less waste of time while ‘instantly’ referred to the speed of communication. These words further illustrate that people were concerned a lot about whether a communication method offered them productivity of communication with quality and speed. This list below shows the repetition of words by various participants.

**Table 8**

21 original answers from survey question 6 which included key words “convenience/convenient”, “efficiency/efficient” and “instantly”

1) Because it's easy and <b>convenient</b> , also it's free
2) the most <b>convenient</b> method
3) It's <b>convenient</b>
4) WeChat is <b>convenient</b> for communication and powerful in function
5) Because me and my friends often use WeChat. It's <b>convenient</b> .
6) It's <b>convenient</b> and cheap to talk to people all around the world.
7) <b>Efficiency</b>
8) <b>Convenient</b>
9) <b>Convenient</b> .
10) Social media are <b>convenient</b> for connecting with people, through text messages, voice and video calls.
11) <b>Convenience</b>
12) <b>Instantly</b>
13) <b>More convenient</b> I don't like audio or video talk if there isn't any urgent matter
14) <b>More convenient</b> than other ways.
15) Voice messages is <b>convenient and less time delay</b> than just typing the words.
16) <b>convenient</b>
17) It is <b>convenient and efficient</b>
18) <b>convenient</b>
19) Most <b>convenient</b> and free
20) <b>convenient and efficient</b>
21) Because it's easy and <b>convenient</b> , also it's free

Others simply associated communication methods with words such as “easy”, “fast”, “direct” and “handy” (see Table 9 below) which are all words which appear to be associated with convenience.

**Table 9**

13 original answers from survey question 6 which included key words “easy”, “fast”, “direct” and “handy”

1) Easiest way to get hold of people and get a reply
2) It's the easiest and fastest way
3) Due to our busy lifestyle the easiest way to keep in touch is using social media.
4) It's the most direct way to contact
5) Handy
6) Easy and fast
7) It's effective and easy
8) Easier to find as they are all under one roof.
9) Allows for easy access and is non-intrusive, meaning they can answer whenever they feel most confident to
10) Because it's easier to use messenger app as I don't have everyone's number.
11) Makes easier to connect and ensure updates which are visual rather than just texts
12) Easy to keep in contact.
13) Because it's easy and convenient, also it's free

“Easy” seems to be an important attribute when people choose a communication method to maintain their friendship, which appeared 11 times in all of the responses. Most of the participants used the word “easy” in relation to the convenience of getting contact and connecting with their friends through particular digital communication methods they preferred. In fact “easy” appears in Table 9 as well where it features along with “convenience”. In addition, a few participants used ‘easy’ and ‘fast’ to emphasize the convenience of particular methods for saving their time and getting better results. This may be to do with the busy lives people lead and therefore pursue a convenient communication method in their daily life with friends. Likewise, the words “direct” and “handy” indicate the easiness on contacts between friends. A direct communication method might suggest that they don’t need to connect over another person or involving other facilities with this method. The word “handy” might relate to a communication method which is easy to use without complicated procedures.

The participants view on preferences of digital communication for the purposes of maintaining their friendship suggest that participants are mostly interested in aspects of convenience and efficiency of digital communication. A convenient method with both speed and productivity may shorten the distances between people and they may feel it is easier to maintain their friendship online for a better result. Although they live far from each other they can feel that it is even much easier and faster to complete the information exchange. Also, it seems that a convenient method is related to the fact that it can make people hear and see their friends rather than just text them. Two students, for instance, stated that they love seeing and hearing their friends as seen in these two answers below. It is possible that these types of interactions involving the senses of sight and sound might make it easier or more ‘real’ to connect with them.

1) Love to hear the voices of my friends

2) Makes easier to connect and ensure updates which are visual rather than just texts

#### **4.4.2 The reason of students communicating with their friends in different ways according to relational stage (survey question 12 - If you communicate with these friends in different ways as indicated in the previous question – please explain why.)**

It was interesting to see in the open-ended questions how 21 of the student participants explained their reasons for choosing different methods based on the varying degrees of relationships with friends. The different relational stages in the survey were identified as best friends, close friends and friends who are not close. As section 4.2.2.1 points out, the data showed that real-time interaction such as video and audio talk which are both synchronous communications were popular for best friends. In contrast, students were more likely to take time to compose a response by using asynchronous communications with those friends they were not close to. Students firstly accepted using different ways in communicating between best friends and friends they are not close to. This is informed by their recognition of the fact that the ways from asynchronous to synchronous students use with friends shows how well the relationship is with them as indicated in these two examples:

1) “Depends how well I know the person and the easiest way to contact them”.

2) “The way I use to communicate people shows the connection with them”.

Most of the responses suggested that participants felt comfortable in using audio or video talk with their best friends instead of friends who they were not close to, because they felt awkward having a more interpersonal connection through seeing or hearing from friends they are not close to. The closeness between friends made them more relaxed about communicating in more interpersonal or emotional ways through phone calls and facetime as in these examples below:

- 1) “I feel more comfortable talking on a phone or videoing with people I know well, so that’s it’s not awkward even if we run out of things to talk about and I can be much more casual”.
- 2) “Video call can only be used between close friends because it’s a good way for us to look at each other and feel like face to face, however it will let me feel awkward if I use that with people who are not close friends”.
- 3) “Close friends and good friends are more likely to communicate in a relaxing way in emotional interaction. Just friends sometimes feel embarrassing to communicate in online face to face communication”.
- 4) “Sometimes feel awkward to directly call a person who you have not kept in touch with”.
- 5) Sometimes you just don’t want to talk to the friends you are not close to

In example one the participant indicates that synchronous communication is more comfortable with people they know well because this live contact can be more casual because they are more familiar with them. Example two indicates that synchronous communication involving other senses of sight and sound were important components for contact with close friends, but not others. The other examples also indicate how different participants felt when it came to communicating with close friends who they appeared to have a more emotional tie with, compared with friends they were not close to and might feel some ‘awkwardness’ with if using these methods. In another example a student stated that using live-real time interaction could disturb friends’ lives if they are not so close to each other. This student seemed concerned about interrupting others at inconvenient times which they would then feel awkward about.

“If the friends are not that close, using audio or video talk might disturb their lives, but others are fine,

I'm so close to you, they are not care about when, how and why I connect to them".

Clearly this student is concerned with how friends 'care' for each other which only happens when people are close. Students seemed to want to avoid any awkwardness as can be seen in this example where real-time talking with friends who were not close to each other was not considered necessary.

"I think it's not necessary talk with friends who are not that close to you through video or audio".

This further reinforces the idea that students are sensitive about their relationships and wish to avoid any awkwardness that may be caused through emotion. It is likely that if people are not close to each other, they think there is no need to communicate more in more direct synchronous forms of communication which they do not feel comfortable with.

#### **4.5 Chapter summary**

The findings from the quantitative and qualitative analysis presented in this chapter provide some interesting insights into the choices of digital communication methods of university students in Auckland. In reviewing these findings, we can see that social media instant messaging as a synchronous communication method was generally more popular with the participants compared with other CMC methods for friendship maintenance. However, it was also interesting to note that most of the students still switched between different digital communication methods which suggests that they believe that it is important to have multiple communication choices to maintain their friendships.

The preference for different methods related to various factors. First of all, students would choose a certain communication method by evaluating its efficiency and convenience. Moreover, friends' relational stage also seemed to be a significant factor which would considerably influence people's use of different communication methods. For best friends, students preferred to use live-real synchronous communication methods to maintain friendships. For friends who were not close, students whereas liked to take time to compose a message using text based or asynchronous communications. In addition, most students believed that communication methods

with sight and sound in terms of live-real time synchronous communication such as audio/video talk and asynchronous communication such as voice message could to some extent make them feel more connected than other methods such as email, texts and social media comments. In terms of geographical distance, on the one hand, when friends lived far from each other, their use of video talk slightly increased. On the other hand, the use of audio talk went up when friends lived close to each other. Also, students would consider location and timing when they chose a certain communication method to maintain friendship. Additionally, it appeared that students use more live- real time communication to solve conflicts and emergencies than at other less urgent times. Furthermore, background attributes also contributed to the different use of communication methods by students for friendship maintenance and included gender, international or not, education qualification and the time length living in Auckland.

# CHAPTER Five: Discussion

## 5.0 Introduction

This chapter discusses the key findings in relation to my research questions about how university students maintain their friendships through digital communication methods which I view through the lens of polymedia theory. In discussing the key findings relating to each of the research questions, I also review these in light of other research that has been conducted with regard to digital communication and relationships.

## 5.1 Summary of key findings

When I started this research, I was eager to understand how students maintained their existing friendships through digital communication because the scholarly literature suggested that the maintenance of friendships for young people was a very important part of their lives. As a matter of fact, I mainly aimed to discover the difference between university students' use of synchronous and asynchronous communication which was RQ1 because these two methods are different in information exchange. I felt it may help students have a better understanding of the impact of these two methods on friendship maintenance.

I hypothesized that although university students might have a preference for different types of communication methods (RQ1 synchronous or asynchronous), they would likely switch between them given that there were so many ways available to them. I also wanted to understand what certain factors might contribute to any differences in preference of communication methods (RQ2). I drew on the theory of polymedia theory which states that the choice of communication method that people make can greatly impact their social relationships. As has been indicated in the previous chapters, polymedia is a theory of how media choice has become more of a social and emotional issue instead of concerning cost and access. Thus, the digital world has become so much integrated with multiple choices for users. An article from University College London (n.d.) compares the different characteristics of QQ and WeChat (two social media platforms in China) to prove that different media may be associated with certain feelings. It further points out that QQ has come to be regarded as more 'rural' which might be mostly used in countryside of China, while WeChat is part of the process of becoming

urban and rejecting their simpler way of life in the countryside (University College London, n.d.). Therefore, it is important to understand all of the media options open to them because each of the methods reflect an emotional engagement. That is, polymedia theory tries to show the stage where people have multiple options to communicate with their social relationships. It is worthwhile to understand those different communication methods have become a whole integrated system where students choose each method to satisfy their social needs.

Following the analysis of the data, the key findings relating to the research questions are discussed below.

### **Research question 1: RQ1: About media consumption/preference**

**What are the differences between university students' use of asynchronous and synchronous communication when it comes to maintaining existing friendship?**

In this research, my expectation was that the students would prefer synchronous communication to maintain their friendships and this proved to be correct. However, concerning my belief that they would prefer audio talk and video talk because it is “live” and enables a person to see or hear the other person, the results showed that in fact the participants preferred to use the social media instant messaging which, while synchronous, is text-based communication. Walther and Ramirez (2009) also found a similar result which they thought was surprising where young people in particular used social media instant messaging for social conversations and found that the use of synchronous, text-based IM technology played an important role in sustaining ongoing associations. This might be because people live a busy life and it is more efficient to use this type of method. Similarly, Cummings et al., (2006) who explored how college students keep in touch with their friends also attempted to explain this finding by suggesting that the live real communications were more expensive than messaging and were therefore a barrier. Their continued strong use of text-based instant messaging in a variety of CMC settings might also suggest that in spite of different situations like geographical distance, friends' conflicts or the motivations like efficiency or intimacy, social media instant messaging was still a more economical way of saving money when communicating with friends.

My findings also suggested that while social media instant messaging might be their first choice for communication to maintain their friendships, most of the participants switched between different communication methods. To some extent, these findings are in accordance with Tandoc et al.'s (2019) study which showed that media users navigate social media platforms by routinely swinging from one to another to maintain their relationships across various platforms. They also further illustrated the trend people usually take in media environment as "an integrated environment" by switching from one medium to another depending on different factors without abandoning older platforms (Tandoc et al., 2019). Likewise, Tandoc et al. (2019) also stated that participants were able to have a more gratifying relationship in maintaining social connections by having multiple choices for digital communication. This is consistent in the results of this study showing that participants find it helpful to engage in multiple platforms to maintain their friendships.

**RQ2: Which of the following factors appear to contribute to students' different uses of communication when it comes to friendship maintenance?**

**(eg. 1. Efficiency 2. Friends' relational stage 3. Intimacy 4. Geographical distance 5. Location and timing 6. Friendship situation 7. People's background attributes)**

Based on people's reasoning for choosing their preferred communication method to maintain their friendship, another key finding was that participants did not seem to consciously consider a communication method based on whether it was synchronous or asynchronous. The answers to the open-ended questions showed that they were more interested in whether a method was an efficient and convenient form of communication depending on the circumstances relating to their relationships with friends. A friends' relational stage clearly made an impact on decisions about how they communicated which may be what is expected. Best friends usually used real-time synchronous communications such as FaceTime or phone call to maintain friendship. Alternatively, students prefer to take time to compose a response with their friends who are not close to them. The reason for this finding may be that students felt embarrassed using real time synchronous communications with friends who are not close because they did not want to interrupt them, or perhaps this method of communication was too personal for their relationship.

In the main, the findings relating to research question two and the factors that might contribute to participants' choice of communication method suggest that there were negligible differences between factors of intimacy, geographical distance, friendship situation, people's background attributes such as gender status and time living in Auckland when it came to students' choice of communication methods for friendship maintenance. It may be that this sample of university students was too small to indicate any strong evidence about these factors. This is not to say that these factors did not matter, but rather that one did not tend to dominate the other. However, in contrast to this, it was interesting to find that the factors efficiency and relational stage were the most likely differences in participants' use of communication methods which suggests the closer a person is to another, the more emphasis they place on having an efficient way to communicate with them. This probably relates to the fact that they are more likely to be in frequent contact with those they are close to.

However, when it came to considering these factors in conjunction with students' different uses of synchronous and asynchronous communications, some results stood out. Intimacy (that is, how connected a method made a participant feel to a friend) was an important factor which students would pay attention to when they chose a synchronous communication method to maintain friendship. Most of the participants stated that they felt more connected this way. This was particularly true when friends communicated with each other when needing support over an issue or conflicts, the use of live-real communications also went up. Geographical distance was also an interesting influencing factor. When people maintain friendships with friends who live far from them, the use of video talk would increase. While for friends who live closer, the use of audio talk would increase. It may be that distance has a lot to do with these choices and that because people who live close to each other are more likely to socialize in person. They only feel it necessary to contact each other using audio. Those people who live far away may prefer to see each other because of the distance that separates them. Location and timing were also considered when it came to whether a person used synchronous or asynchronous methods.

While students did not want to show their face and use their voice to communicate with their friends using synchronous methods when they were not particularly close to a friend. Although these factors could influence students' choice of communication method, social media instant messaging is still the preferred method when it comes to maintaining friendships.

Background attributes also reflected students' different use of communication methods. Firstly, it showed that some of the women were more likely to use text-based or asynchronous communication methods for friendship maintenance purposes. Furthermore, phone call or live call was a popular communication method among men. Also, men were more likely to switch between communication methods. Secondly, synchronous communication such as social media instant messaging, audio or video call have more international supporters among these students. Thirdly, postgraduate participants tended to use more social media instant messaging and video than undergraduate students. Whereas undergraduate participants may be a population who take voice interaction (whether synchronous or not) as an important part for friendship maintenance. Lastly, the participants who lived in Auckland longer tended to use more email instead of social media instant messaging.

## **5.2 Connecting the results with previous studies and polymedia theory**

Generally, the findings showed that university students would switch between different methods depending on circumstances, which supports my hypothesis and also confirms the view of polymedia theory that “different media work in different ways” (Jansson, 2015, p. 33). Although synchronous communication methods involving social media instant messaging were the most popular method among these participants, it was unsurprising that most users frequently engage in what has been referred to in earlier chapters as “platform-swinging” with multiple social media venues to choose from.

In this study, platform-swinging refers to a trend where people use more than one social media platform and rotate among these platforms - switching from one platform to another without abandoning that platform. Also, the digital platforms become such an integrated system where each time people search for their preferred, most comfortable or productive method to solve different problems, maintain routinely contact and be connected with their friends in order to maintain their friendship. As it is, people therefore are concerned more about their emotions and social needs than whether to choose one method and why they choose certain methods.

This study agrees with Madianou (2014) who argues that in considering polymedia theory we can see that digital media users do not limit themselves to one specific digital platform or communication method, instead “they are able to efficiently navigate through multiple platforms by exploiting the differences between these platforms to express themselves and to manage various mediated relationships” (p. 22).

Quan-Haase and Young (2010) point out that it is necessary to understand why switching (or swinging) occurs from one communication method to another and what motivates users to switch between different methods. In terms of different motivations and factors in this study, convenience is an essential factor which people tend to be concerned about when choosing a preferred communication method with friends. This statement is in accordance with Eden and Veksler’s (2016) research confirming that efficiency and convenience was the most commonly given reason for preferred communication methods. They further noted that some participants use phone call because it can be a “quicker way of communicating” while others think that “text-based communications were preferable when speed was necessary and sending messages is easy” (Eden & Veksler, 2016, p. 134). In terms of relational stage, the results show that best friends usually prefer live-real synchronous communications and friends who are not close to each other mainly compose messages, supporting Wang and Anderson’s (2007) finding that closer friends are more likely to use synchronous communications with richness. However, they also conclude that “the closer their relationships become, the more communication channels people adopt and the more frequently they use these tools to keep the relationship going” (Wang & Anderson, 2007, p. 22). But that result is not upheld with the findings of in this study.

Also in line with polymedia theory and the notion that the type of relationship between people will affect their communication method, the results of this suggest that in certain relationships factors such as intimacy, geographical distance, location and timing and friends’ situations were important considerations. Firstly, the finding in this study shows that most people feel more connected with friends by using real time communication methods. This result is consistent with the findings of a study by Murphy (2017) which indicated that nonverbal cues in visual and audio communications, such as facial expression, body movement, and voice tones, can communicate emotion and help manage the relationship with more connection and closeness. In addition, participants don’t think that new relationships would affect their maintenance of existing

friendships in this study. Cummings et al., (2006) pointed out that the development of new relationships further constrains the time available to maintain existing friendships. Their findings are in contrast to the results of this study.

Secondly, the finding suggests that when friends live closer, audio talk would increase. When friends live further away, the video talk seems to increase. But for both geographically close and geographically distant friendships, social media instant messaging is still the most popular communication method. One study examining the enactment of maintenance behaviors via CMC found no differences in the use of communication methods between geographically close and long-distance friends (Johnson et al., 2008). Their findings are in contrast to the results of this study. Furthermore, another consideration related to this finding from Johnson and Becker's (2010) research argues that communication methods must be examined in combination, not isolation. Taken together, these theories offer a more comprehensive picture of patterns of CMC use in long-distance friendships.

Thirdly, the finding shows that still over half of the participants admit that location and timing would affect their decision-making of digital communication methods to maintain friendships. The result might suggest that participants change their communication methods according to where they are and what the time is in a day. Interestingly, based on the findings of similar studies, a more plausible explanation is that asynchronous communication method allows people to use wherever they are (private or public) without time limits (McGlynn, 2007). McGlynn (2007) illustrated that each respondent mentioned the importance of conveying feelings of care and consideration for their friends, but how they were unable or unwilling to use their finite face-to-face availability to do so. According to McGlynn (2007), this revealed a trend whereby some individuals are eager to maintain relationships but do not wish to invest face-to-face time in the process probably because their location and time don't allow them to show their face.

Furthermore, participants mainly use social media instant messaging during difficult times (conflicts and emergency) with their friendships. It seems that the use of live-real communications increases in these situations. This trend is also consistent with the findings of a study by Kim et al. (2007) who analyzed digital communication methods. In fact, they identified that communicators might have increasing expectations of

rapid response time for online communication methods such as social media instant messaging if face-to-face communication is unavailable at that moment due to assumptions that individuals always carry their mobile phones. Additionally, synchronous CMC in terms of video and audio options diminish the potential for manipulation and careful concern over word choices as proposed by Stafford and Hillyer (2012).

Finally, the findings in my study confirm that there are differences between participants' use of communication methods in terms of background attributes (gender, international or not, university qualifications and time living in Auckland). With regard to gender difference, it shows more women support the use of text-based communication methods, while live call is popular among men. The result is consistent with the claim of Kimbrough et al. (2013) that compared to men, women prefer and more frequently use text messaging. Also, the findings show a difference between participants' use of communication methods under the influence of international or domestic, university qualifications and living time in Auckland. But few of these aspects are covered in existing study on CMC about friendship maintenance.

### **5.3 Chapter summary**

In summary, this chapter has discussed the key findings of this research based on the research questions and through the lens of polymedia theory. It also further discussed related studies.

Overall this research has answered my first research question that social media instant messaging as a synchronous communication stands out and that it becomes students' preferred communication method even with different situations and motivations when it comes to maintaining friendships. However, the boundaries appear to have become blurred between the synchronous and asynchronous communications such as social media instant messaging. According to Walther and Ramirez (2009), social media instant messaging has a quick response time because users frequently look at their phone many times a day. Moreover, with instant messaging, people can maintain multiple streamlined conversations at once with instant messaging. It probably shows that this is no longer important for young people such as students whether a communication method is synchronous or not. They always seem to be online using instant messaging and doing things at the same time- they are always checking their phones and switching devices and platforms. As is indicated by Ledbetter (2015),

in the digital age, people always use one method alongside others and then switch between different methods according to different factors or motivations. Perhaps the digital platforms have become so much integrated into their daily lives. This observation is consistent with the polymedia theory. Whether they respond straight away or not, it does not really matter.

In terms of Research Question2, this study also indicates that university students tend to switch between different communication methods, and it may be affected by different factors and motivations such as efficiency, friends' relational stage, intimacy, geographical distance, location and timing, friendship situation, people's background attributes. Again as was mentioned in the introduction chapter (polymedia theory), the findings from this research are consistent with polymedia theory, which states that "when potential constraints, such as media access, cost and media literacy are largely removed, people tend to treat media as an integrated environment of affordances" (Madianou & Miller, 2013, p. 21). They selected one particular media rather than others for emotional and social needs in terms of these factors and motivations instead of those potential constraints.

# **CHAPTER Six: Conclusion**

## **6.0 Introduction**

This research has investigated university students use of digital communication methods in the maintenance of their friendships. I conducted a survey of 60 university students living in Auckland. Almost all the participants thought that digital communication methods were important for the maintenance of existing friendships. They used various types of CMC methods to maintain their friendship every day in their busy life and most of them switched among different methods. Among all the digital communication methods, social media instant messaging as a type of text-based synchronous CMC stood out as the most preferred method among participants. However, motivations and factors such as efficiency, friends' relational stage, intimacy, geographical distance, location and timing and friendship situation are also concerns of university students when choosing communication methods to maintain their friendships. Background attributes such as gender, international or not, university qualifications and time length living in Auckland also contribute to the different use of communication methods for the purpose of friendship maintenance. Above all, these factors and motivations were students' reasons for choosing different communication methods whether synchronous or asynchronous and switching between methods under certain situations. It suggests that the digital world has become so much integrated with multiple choices for people to choose from.

In this final chapter I reflect on the implications of this research (and my contribution to the field of digital communication use), its limitations and recommendations for further investigation.

## **6.1 Implications of this research**

This study builds on existing evidence about the rise in popularity of the use of computer-mediated communication over the past decade, "not only in terms of number of users around the world, but also in terms of number of platforms users can choose from" (Tandoc et al., 2019, p. 1). In addition, digital media has played an important role in people's lives such as friendship maintenance (Rabby & Walther, 2003). The value of this

research is that it contributes knowledge to understandings about how university students, as a specific group, maintain their pre-existing friendships through digital means.

To date, research on media use about maintaining relationships has focused on a range of different areas such as relationship initiation and development, as well as various contexts within family, romance, and working for example (Manago et al., 2020; Sharabi & Dykstra-DeVette, 2019; Gesselman et al., 2019). However, my study chose to focus specifically on the area of friendship maintenance. In section 5.2, I compared the findings with previous studies and identified similarities in the findings, particularly that social media instant messaging as one form of synchronous communication was the most popular method of communication because it was convenient and fast (Walther and Ramirez, 2009; Ledbetter, 2015).

However, my research added three new perspectives to the field linking CMC with interpersonal relationships when it came to university students. That is, intimacy, location and timing, and friendship situation were found to be influencing factors when deciding which digital communication methods to choose. The implications of this is that university students take their relationships seriously and place a great deal of effort when it comes to friendship maintenance. Friends clearly play a very important role in their lives – particularly when they are living away from home. This relates not just to their physical circumstances (location and time) but is also dependent on the types of friendships they have and the emotions involved (intimacy and friendship situation). This suggests that it is important for students to have access to various communication methods from the perspective of mental well-being. I also found that my adoption of polymedia theory in this research greatly aided my understanding of the findings.

The application of a polymedia theoretical framework has greatly informed this research by drawing attention to the fact that people have a range of choices of digital communicative methods available to them. However, these choices may be dependent on their emotional needs, or what works best for their relationships. My findings echoed polymedia theory with the sample of university students demonstrating their knowledge and consideration of different methods of communication based on what their purpose for contact or needs were when contacting friends, rather than just access or cost. This included, for example, whether they were looking for emotional support, how familiar they were with the person, where they were at the time

(geographical distance or time zone), whether they wanted their contact to be immediate or delayed, or whether the circumstances were better to be text based or visual.

At the same time my exploration of platform ‘switching’ and ‘swinging’ (Quan-Haase and Young, 2010), has not appeared specifically in the scholarly literature about polymedia theory. This concept whereby users of communication media not only have lots of choices about the methods they use, but actually ‘rotate’ among many different platforms, I believe, could be fore fronted in future research that applies polymedia theory.

My research, although only exploratory in nature, is one of only a few studies about only focusing on friendship maintenance around university students under CMC settings. Also, most research on digital media have focused on one platform such as Facebook (McEwan et al., 2018), Twitter (Chen, 2011), while few studies have done comparative work across multiple communication methods by focusing on people’s different choices depending on different situations (Boczkowski et al., 2018; Quan-Haase & Young, 2010). This study therefore provides new insights into friendship maintenance through digital means by understanding what the differences between university students in their use of synchronous and asynchronous communications. In addition, based on polymedia theory, this research aimed at identifying the important factors or people’s motivations when understanding the differences between media use.

These results should be taken into account when considering the importance to the whole life of the friendship of university students. University students seem to be very sensitive to the social circle and rely on friends for support. As demonstrated by Wang and Andersen (2007), they are a sector of society that incorporates new technologies into their daily lives managing social relationships. They also place a high value on their friendships and in particular rely on their friends for support particularly during difficult times. According to Ruppel et al. (2017), the transition out of the home and to college can result in loneliness, stress, and other psychosocial problems among students who are not equipped to manage the challenges associated with their transition. They may eagerly seek comfort and appreciation from their friends. Sometimes when they have troubles, they can’t discuss them with their family. Having friendships can be really important for their life logically. Thus, digital media plays a significant role in university students’ lives by shaping the ways they communicate with friends and incorporate it into their day-to-day lives (Wang & Andersen, 2007). However,

the interplay between the Internet and existing friendships is not as simple as maintaining friendships face-to-face. For participants like university students, the research presents them with an opportunity to have a voice and share their own perceptions of different forms of digital communication methods. The findings from this project may also offer them greater understandings about the connection between digital technologies and friendship maintenance.

For the wider community, which often indicates much concern about young people's overuse of digital media, the knowledge that will be shared through this research means a greater awareness about the positive side of digital technologies for friendship maintenance. The possible practical implication for APP developers would be that designing a social media platform which has more multiple communication methods whether synchronous or asynchronous may make it easier to give people opportunities to navigate in this platform with different choices. They could switch between different communication methods to meet up in various situations in order to manage a healthy and stable friendship. So, this study might help with the social media app designing for a purpose of communicating with friends or other relationships.

There are also implications for me as a primary researcher in conducting this research in several ways. I have been able to contribute new knowledge about the maintenance of existing friendships through digital means which I achieved by conducting an online survey of university students living in Auckland New Zealand.

## **6.2 Limitations**

There are some limitations that I encountered with this study. Firstly, I was not familiar with conducting an online survey and had to learn how to use the Qualtrics software. I also needed to learn how to download and prepare the data for analysis, and to formulate graphs for discussion. This was a learning curve for me which I found challenging – though it puts me in good stead to conduct future research. Secondly, the generalizability of the results was limited by the sample size which was affected by the limited time I had to advertise for participants in this study. However, the answers from the 60 participants still enabled me to obtain some interesting insights into the students' behavior when it comes to digital communication choices. The online

survey questions at times did not always seem to be fully understood by some of the participants. It may have been that there was a language barrier with some of the international students, or alternatively it may be that the participants took digital communication so much for granted in their daily lives that they had difficulty in interpreting the meaning of the questions. Lastly, due to the fact that the participants were anonymous, I was limited in how much I knew about the background of the students and how this might affect their answers to the survey questions.

Notwithstanding the limitations, from the results there are some interesting experiences from my research which others can learn from.

### **6.3 Recommendations for future research**

For future research a larger sample that is not limited to the geographical area of Auckland but that covers other areas in New Zealand or even includes participants from different countries is recommended. This would give a much broader understanding of university students use of digital communications in maintaining their friendships.

In addition, the research could be expanded to include interviews or focus group research to obtain more qualitative data on digital communication use and to widen the sample to include older people as well. Participants specific reasons about why they chose each method under certain circumstances or motivations in order to understand more about their decisions and decrease the possibility of misunderstanding the survey questions. Further studies should also take into account analyzing how to improve people's ability to manage their friendships effectively using digital media and whether a certain communication method is useful for improving people's relationships in specific situations.

The results of this study have implications for people of all ages and not just university students as the number of people using digital technology to manage relationships, personal or otherwise, continues to grow. Future

research could explore the ways in which people could improve on how they manage their relationships in a world where it is not always possible to communicate face to face in the physical world.

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# List of Appendices

Appendix 1: Survey questions

Appendix 2: Advertisement to recruit participants

Appendix 3: Participant information sheet

Appendix 4: Ethics approval

## Appendix 1: Survey questions

### Questions to be uploaded to an online survey platform using Qualtrics – Lauren Zhuolan

#### Survey about maintaining friendships through online communication

1. Which gender are you?
  - A. Male
  - B. Female
  - C. Other
2. Are you an International student or a domestic student?
  - A. International
  - B. Domestic (you have resident status in New Zealand)
3. What degree are you studying for?
  - A. Undergraduate degree or diploma
  - B. Postgraduate degree
4. How long have you been living in Auckland?
  - A. 1-3 months
  - B. 4-12 months
  - C. 1 year-3 years
  - D. Over 3 years
5. Please indicate the method you prefer to use when it comes to maintaining contact with friends.
  - A. Email
  - B. Texts
  - C. Social media comments
  - D. Social media instant messaging (eg Facebook or WeChat)
  - E. Voice message (Recorded)
  - F. Phone call/Live call through social media (Audio only)
  - G. Video talk such as Face Time, WhatsApp or Viber (Visual)
6. Please indicate the reason behind your answer to the above question. (Open question)
7. Which of the following communication methods are you most likely to use to contact friends who live a considerable distance from you eg another city or country?
  - A. Email
  - B. Texts
  - C. Social media comments
  - D. Social media instant messaging (eg Facebook or WeChat)
  - E. Voice message (Recorded)
  - F. Phone call/Live call through social media (Audio only)
  - G. Video talk such as Face Time, WhatsApp or Viber (Visual)

8. Which of the following communication methods are you most likely to use to contact friends who lives close to you?

- A. Email
- B. Texts
- C. Social media comments
- D. Social media instant messaging (eg Facebook or WeChat)
- E. Voice message (Recorded)
- F. Phone call/Live call through social media (Audio only)
- G. Video talk such as Face Time, WhatsApp or Viber (Visual)

9. How important are the internet and digital devices to you when it comes to keeping contact with existing friends?

- A. Very important
- B. Important
- C. Neutral
- D. Somewhat important
- E. Not important at all

10. Do you switch between various digital communication methods?

- A. Yes
- No

B.

11. People tend to use specific communication methods with particular group of friends as it depends on the person such as whether they are a best friend, close friend in my social circle or someone I am friends with but am not close to. What kind of online communication method do you use with these different groups? Please tick the box.

	A live-real time interaction (Audio talk, video talk)	B A method allows you to take time to compose a written response (email, texts, comments, social media chat)
A Best friend		
B Close friend in your social circle		
C A friend, but you are not close to them		

12. If you communicate with these friends in different ways as indicated in the previous question – please explain why. (Open question)

13. Do you feel that having multiple forms of digital communication helps to maintain your existing friendships?

A. Yes

B. No

14. Which of the following reasons below do you consider when deciding which form of digital communication to use with your existing friend to maintain a friendship?

- A Specific time in a day
- B Their likely location such as university, home, or out socializing
- C None of the above

15. When you wish to solve a personal problem with an existing friend by using a digital form of communication, which one are you most likely to use in the first instance?

- A. Email
- B. Texts
- C. Social media comments
- D. Social media instant messaging (eg. Facebook or WeChat)
- E. Voice message (Recorded)
- F. Phone call/Live call through social media (Audio only)
- G. Video talk such as Face Time, WhatsApp or Viber (Visual)

**Please indicate your level of agreement with the following statements:**

16. I feel more connected with my friends when I can see or hear them through a digital method such as FaceTime.

- A. Strongly agrees
- B. Agree
- C. Neutral
- D. Disagree
- E. Strongly disagrees

17. Having new friendships online affects the time I have available to maintain my older friendships

- A. Strongly agrees
- B. Agree
- C. Neutral
- D. Disagree
- E. Strongly disagrees

Thank you for completing this survey. When the research is finished in 2020 a summary of the findings will be posted on the AUT website. See: <https://www.aut.ac.nz/study/study-options/language-and-culture/courses/master-of-english-and-new-media-studies>

The poster is a vertical rectangle with a solid yellow background. At the top left, there is a black square containing the white text 'AUT'. Below this, centered, is the text 'Are you a university student who uses digital communication to maintain your friendships?' in a bold, brown, sans-serif font. Underneath that is the text 'Please take this survey and let me know.' in a bold, blue, sans-serif font. In the center of the poster is an illustration of five diverse young adults standing in a row. From left to right: a person with dark skin and short dark hair wearing a black tank top and teal pants; a person with light skin and long red hair wearing a black tank top and teal pants; a person with dark skin and long dark hair wearing a light blue off-the-shoulder top and green pants; a person with light skin and long blonde hair wearing a black tank top and black pants; and a person with dark skin and long dark hair wearing a green dress. Surrounding the central illustration are several yellow-outlined icons: a Twitter bird, a speech bubble with a telephone handset, a WhatsApp logo, an Instagram camera, a Facebook 'f' logo, a smartphone, a speech bubble with a dollar sign, and a speech bubble with an '@' symbol. Below the central illustration, there is a paragraph of text in a brown, sans-serif font: 'For my masters degree in English and New Media, I am researching how university students maintain their friendships using digital communication methods. I would love to know about the different ways you communicate with others. If you are 18 years and older and attend university here in Auckland and would like to take part in this anonymous survey I am conducting, please go to this link or scan the QR code. The survey is short and will take around 10 minutes to complete.' Below this paragraph is another paragraph in a brown, sans-serif font: 'The data you provide will remain completely confidential and will only be used for this research and not be shared or given to others.' At the bottom right of the poster is a square QR code. At the very bottom, centered, is the text 'Approved by the Auckland University of Technology ethics Committee on 29 August 2019, Autec Reference number 19/287.' in a small, brown, sans-serif font.

Approved by the Auckland University of Technology ethics Committee on 29 August 2019, Autec Reference number 19/287.

[https://qtrial2019q3azl.azl.qualtrics.com/jfe/form/SV\\_30tXNpvGeXqA1zZ](https://qtrial2019q3azl.azl.qualtrics.com/jfe/form/SV_30tXNpvGeXqA1zZ)

[https://qtrial2019q3azl.azl.qualtrics.com/jfe/form/SV\\_30tkNpv6eXqA\]Zz](https://qtrial2019q3azl.azl.qualtrics.com/jfe/form/SV_30tkNpv6eXqA]Zz)

[https://trial2019q3az1.az1.qualtrics.com/jfe/form/SV\\_30tXNpv6eXqA1Zz](https://trial2019q3az1.az1.qualtrics.com/jfe/form/SV_30tXNpv6eXqA1Zz)

[https://trial2019q3azl.azl.qualtrics.com/jfe/form/SV\\_30tNpvG6eXqAIZz](https://trial2019q3azl.azl.qualtrics.com/jfe/form/SV_30tNpvG6eXqAIZz)

[https://qtrial2019q3azl.azl.qualtrics.com/jfe/form/SV\\_30ixNpvcEXqAIZz](https://qtrial2019q3azl.azl.qualtrics.com/jfe/form/SV_30ixNpvcEXqAIZz)

[https://qtrial2019q3azl.azl.qualtrics.com/jfe/form/SV\\_30tXNpVGeXqAJZz](https://qtrial2019q3azl.azl.qualtrics.com/jfe/form/SV_30tXNpVGeXqAJZz)

[https://qtrial2019q3azl.zl.qualtrics.com/jfe/form/SV\\_30tXNpVGeXqAJz](https://qtrial2019q3azl.zl.qualtrics.com/jfe/form/SV_30tXNpVGeXqAJz)

[https://qtrial2019q3azl.azl.qualtrics.com/jfe/form/SV\\_30tkNpvG6XqA1z](https://qtrial2019q3azl.azl.qualtrics.com/jfe/form/SV_30tkNpvG6XqA1z)

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[https://qtrial2019q3azl.azl.qualtrics.com/jfe/form/SV\\_30tXNpvG6XqAJZz](https://qtrial2019q3azl.azl.qualtrics.com/jfe/form/SV_30tXNpvG6XqAJZz)

[https://qtrial2019q3az1.z1.qualtrics.com/jfe/form/SV\\_30tXNpvcGXqAJz](https://qtrial2019q3az1.z1.qualtrics.com/jfe/form/SV_30tXNpvcGXqAJz)

[https://qtrial2019q3az1.zl.qualtrics.com/jfe/form/SV\\_30tXNpvGeXqAJz](https://qtrial2019q3az1.zl.qualtrics.com/jfe/form/SV_30tXNpvGeXqAJz)

[https://qtrial2019q3azl.zl.qualtrics.com/jfe/form/SV\\_30kNpvGeXqAJz](https://qtrial2019q3azl.zl.qualtrics.com/jfe/form/SV_30kNpvGeXqAJz)

## **Appendix 3: Participants information sheet**

### **Participants Information Sheet Date Information Sheet Produced:**

30<sup>th</sup> July 2019

#### **Project Title**

Maintaining friendships through digital technologies: an investigation of university students and their online communications practices.

#### **An Invitation**

Hello, my name is Zhuolan and I am studying at AUT for my Masters' degree in English and New Media Studies and I am trying to figure out how university students maintain friendship with online communication methods. I would be very grateful if you would participate in my research on this topic and am inviting you to participate in an anonymous online survey. I am sure that you will find my research useful in understanding how the use of digital communications can help maintain and manage healthy friendships over time.

#### **What is the purpose of this research?**

The purpose of this research is to inform people about what works best to connect with others in the digital age. I aim to identify the benefits as well as any limitations of different forms of online communications so that people can make the best use of them to maintain a better balance in their relationships with new friends and old. You might find the results of my research which will be accessible through my university website useful in your own life as well particularly when you have different circles of friends – relatives, university, sports etc - both near and far.

#### **How was I identified and why am I being invited to participate in this research?**

You might have seen my advertisement for this research on a noticeboard in public at a café or at university where I am most likely to find participants for my survey. This advertisement has given you the choice to link to the survey questions and as participant you will see you must be a university student over 18 years of age who is living in Auckland, who has established friendships both face to face and online, and who uses the internet to communicate with them.

#### **What will happen in this research?**

This is an anonymous survey that is completed online. Your identity will not be known to anyone. The survey will take approximately 10 to 15 minutes to complete, depending on your choice. All these questions are about the online methods you use to maintain your friendships.

#### **What are the benefits?**

You may value friendships in your lives for many reasons, but it is not always possible to keep in touch with friends face to face particularly if you are a university student at a different location from your friends. This research offers you an opportunity to voice your opinions and share your own perceptions about different forms of digital communication methods such as email, texts and messaging. The findings from this project may help you better understand the connection between digital communication technology and friendship maintenance.

#### **How will my privacy be protected?**

This is an anonymous survey conducted through the internet. Your identity will remain confidential and not be known by anyone including me and my supervisor. The responses you give on this survey will only be viewed by the researchers. All of the results will be grouped together for statistical purposes and individual responses will not be able to be identified in the research outcomes.

### **What are the costs of participating in this research?**

You will not incur any monetary cost by being involved in this research. The only cost to you is your time in completing it. It is estimated that the survey will take 10-15 minutes to complete.

### **Are there any risks?**

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will not disadvantage or advantage you in any way. The questions ask about how you maintain your friendship through digital communications. You are free to withdraw from completing the survey at any time should you decide that you no longer wish to participate. Since the survey is anonymous, no information about your identity will be collected or used.

### **What opportunity do I have to consider this invitation?**

This survey will be available to complete for a period of three weeks so you have time to consider this invitation until the survey officially closes on (date).

### **What do I do if I have concerns about this research?**

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor: [philippa.smith@aut.ac.nz](mailto:philippa.smith@aut.ac.nz) Work phone: 9219999 8276 or 021 1815096

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTECH, Kate O'Connor, [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz), 921 9999 ext 6038.

### **Whom do I contact for further information about this research?**

Please keep this Information Sheet for your future reference if you have further concern. You are also able to contact the research team as follows:

#### **Researcher Contact Details:**

Zhuolan; email: [phoebelan1223@gmail.com](mailto:phoebelan1223@gmail.com)

#### **Project Supervisor Contact Details:**

Philippa Smith; email: [philippa.smith@aut.ac.nz](mailto:philippa.smith@aut.ac.nz); phone: 9219999 8276 or 021 1815096

### **How do I agree to participate in this research?**

By clicking the box below, you will be able to access the survey. It will indicate your agreement to participate in this research and you confirm that you are a university student in Auckland, aged 18 years or older and that you understand the purpose of this survey.

Thank you for considering your participation in this research project.

Do you consent to proceed with the survey?

-Yes

-No

Approved by the Auckland University of Technology Ethics Committee on 29 August 2019, AUTECH Reference number: 19/287.

## Appendix 4: Ethics Approval

29 August 2019  
Philippa Smith  
Faculty of Culture and Society

Dear Philippa

Re Ethics Application: **19/287 Maintaining friendships through digital technologies: an investigation of university students and their online communications practices**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 27 August 2022.

### Standard Conditions of Approval

1. The research is to be undertaken in accordance with the [Auckland University of Technology Code of Conduct for Research](#) and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organizations is of a high standard.

AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organization at which your research is being conducted. When the research is undertaken outside New Zealand, you need to meet all ethical, legal, and locality obligations or requirements for those jurisdictions.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz). The forms mentioned above are available online through <http://www.aut.ac.nz/research/researchethics>

Yours sincerely,



Kate O' Connor  
Executive Manager  
Auckland University of Technology Ethics Committee  
Cc: [phoebelan1223@gmail.com](mailto:phoebelan1223@gmail.com)