HOW DO PEOPLE USE SOCIAL NETWORK SITES TO REGULATE THEIR EMOTIONS AND WELLBEING?

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ABSTRACT

This thesis explores the relationship between social network site use, emotion regulation and mental health. As social network site use becomes more ubiquitous in western countries, adverse health consequences are claimed to stem from its overuse. This thesis seeks to determine whether emotion regulation styles play a pivotal role in how users interact with social network site, and the impact of those styles. By measuring the amount of time participants spend on social network sites each day, this thesis will explore three hypotheses. One hundred and fourteen participants from a New Zealand university were randomly assigned to an experimental or control group and completed pre-test and post-test surveys consisting of the DASS, ERQ, and a questionnaire about attitudes toward social media. The experimental group were asked to continue their social network site usage as normal for one week, then reduce it by half, while the control group kept using social network sites as normal. The results showed that participants in the experimental group experienced lower rates of stress and anxiety, although their social network site use was not significantly different. Maladaptive emotion regulation strategies were also found to be associated with increases in depression and anxiety. Emotion regulation shared no relationship with quantity of social network site use. These results provide evidence that issues associated with social network site use is not solely due to quantity of use. This thesis adds to a growing body of research investigating healthy social network site use and draws links to how people use these sites and regulate their emotions while using them.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Since the advent of social media in the early 2000s, it has been unclear what the impact of sites such as Facebook, Instagram and Snapchat have on the wellbeing of users. Despite this lack of clarity, there appears to be considerable concern about possible harmful effects of social media use and early research supported this concern (Hogan & Strasburger, 2018; Lup, Trub & Rosenthal., 2015; Settle, 2018; Vahedi & Zannella, 2019). However, more recent research suggests that a more nuanced approach is required.

The term 'social media' refers to a wide range of online communities and entertainment providers that are easily accessible by internet-capable technology (Settle, 2018). A subcategory of social media are social network sites. Social network sites describe platforms that resemble an online community where users can easily communicate with one another. As noted above, researchers have been increasingly interested in whether the use of social network sites is harmful to the user's health and wellbeing. This thesis explores this association and seeks to determine if emotion regulation plays a mediating role.

With over 2.4 billion active users, Facebook is an example of an extremely popular social network site (Facebook, 2020b). Time-consuming too, as many users will spend on average 46 minutes using social networks each day (Nielsen, 2018). Social media sites are synonymous with modern living in New Zealand and worldwide, with 90% of people in New Zealand over the age of 15 having a Facebook account (Gervai, 2017). There are a host of

platforms, such as Instagram, LinkedIn, Tinder, and many more, each filling a niche in a person's online portfolio. A primary function of these sites is to keep in touch with others and maintain an online presence in an increasingly interconnected society.

Social networking has been linked with a host of mental health concerns, including depression, anxiety, eating disorders and sleep disorders, as well as public health concerns, such as cyberbullying, the spreading of 'fake news' and promotion of hateful messages (Elhai, Levine, Dvorak, & Hall, 2016; Hogan & Strasburger, 2018; Lin & Utz, 2015; Lup et al., 2015; Sagioglou & Greitemeyer, 2014; Settle, 2018; Tandoc, Ferrucci, & Duffy, 2015; Vahedi & Zannella, 2019; Verdyun et al., 2015). Social media has numerous positive aspects too, in particular the ability to have instant and gratifying communication with peers. Collaboration between content creators and business partners has never been easier. Positive social change can also be influenced by a social network site's ability to be used as a platform for users to communicate to a wide audience (Settle, 2018).

The question about social media quickly becomes, is it harmful to us? Or are we using it in harmful ways? In what way can we use social networking to optimize our mental health? Perhaps the answer lies in examining how emotion is regulated and what regulatory processes people engage in when using these sites. Social media use may then be explained by internal and external behaviour and thinking that alter its impact, for good or for worse. This thesis provides an opportunity to examine the relationships our social network use has with our mental health and how we regulate our emotions.

1.2 Background to the study

As social networking is multi-faceted, it is difficult to compare its use to other, similar activities that include online communication, a wealth of content, and strict rules or codes of conduct. Prior research has often linked excessive social network use with smartphone addiction, internet use, video games, and internet gambling (Twenge, Joiner, Rogers, & Martin, 2018b). However, there are few similarities that social network use has with these other technological activities, and the motives for use between them are often vastly different. As social media has continued to evolve to become an increasingly integral part of many people's lives, the research falls behind. Research on its harmful effects are inconsistent, and often selectively chosen pieces of information are circulated in the media fueling fear and mistrust of social network sites (Hampton & Wellman, 2018). A robust definition for social network addiction still does not exist, despite research on excessive use by some (Vahedi & Zannella, 2019). Finally, as the younger age groups who are most likely to use social network sites continue to have the highest rates of mental health problems, the links are still poorly understood (Kross et al., 2013).

1.3 Mental Health

Some key aspects of mental health are the concepts of depression, anxiety and stress. These describe a range of symptoms and behaviours that result in low moods, fearful behaviour, and increased rates of physical health problems (APA, 2013). These three factors form the focus of participants' mental health in this study. They will be examined through the Depression Anxiety Stress Scale (DASS), a reliable and validated inventory which produces

a score for each participant along each of the three subscales: depression; anxiety; and stress (Lovibond & Lovibond, 1995).

1.4 Emotion Regulation

Emotion regulation is an area of research which is continually broadening for its potential to help people understand and better regulate themselves in difficult circumstances. There are a wide range of emotion regulation techniques that people can utilize with varying levels of success. However, some people are better at utilizing some techniques than others, impacting improvements in mental health and well-being. Two well-studied emotion regulation techniques are cognitive reappraisal and expressive suppression. These describe the ability of people to either change the way they *think* about an emotional situation, or how people change the way they *respond* to a situation (Gross, 2015). A useful way to quickly measure these traits is through the Emotion Regulation Questionnaire (ERQ), which is used in this study (Gross & John, 2003).

1.5 Aim and Research Questions

The aim of this study is to determine the extent to which time spent on social network sites shares a relationship with mental health and to explore these relationships with emotion regulation. A secondary objective of this study is to create a profile of mental health in a New Zealand university. Finally, the study will also seek to understand general attitudes people hold about social media, and whether they are a positive or negative influence personally, or socially. There are three main research questions posed in this study.

The first research hypothesis states that there will be a positive relationship between time spent on social network sites, and mental health problems as measured by the DASS. If this is the case, there will be a difference between the control and experimental group, where the experimental group will experience a decrease in DASS scores corresponding to their decrease in social network use.

The second research hypothesis states that participants who favour a suppressive emotion regulation style will tend to use more social media than participants with a reappraisal emotion regulation style.

The third and final research hypothesis states that participants who favour a suppressive emotion regulation style will possess higher scores of depression, anxiety and stress, as compared to participants with a reappraisal style who will hold lower scores.

With these three research hypotheses, it is hoped that relationships can be mapped out between the three factors to describe how social network use is regulated by or regulates our emotional and mental well-being.

1.6 Significance

It is hoped that this research will offer a better understanding of how social network use interacts with our emotions and mental health. By mapping out the relationships between emotion regulation, mental health, and social network use, it is hoped that this study will be able to help create awareness of what exactly are the most harmful and healthy processes in

social media. This will have important implications in clinical environments, and well as on a personal level for users of all social network sites.

1.7 Overview of methods

By using modern research techniques, the study conducted herein will use an experimental, longitudinal design to compare the effect of decreased social network use on mental health.

The participants will first complete a pre-test survey including the DASS and ERQ. They will be randomly selected to be a part of a control or experimental group. They will also be given a set of instructions to download an app-tracking program onto their compatible smartphone. Participants in the experimental group will be asked to alter their social network use while participants in the control group will continue using social network sites as they normally would. After this two-week period is up, the participants will be given a link to complete an online post-test survey. They will also be required to upload their app data. The combination of this data will allow trends and patterns to be seen, and whether there are any differences in the mental health of participants in the experimental and control conditions.

1.8 Overview of Thesis

This thesis is divided into six chapters. The next chapter consists of a literature review of prior research on this subject. This will provide a deep and comprehensive understanding of what social networks are and how they are used. Mental health as it relates to social networks will be discussed and a discussion of the ways in which health can be improved or

weakened due to social network use is included. The chapter will conclude with a discussion of important theoretical approaches to emotion regulation, and why these are important in the context of social media use.

Chapter Three outlines the research methodologies. It begins with how the experiment was designed, and what role the participants have in this research. The research objectives will next be reiterated and presented according to the hypotheses of the study. How the participants were recruited will follow, along with information on the participant demographics. As data collection in this study is a rather complex process, the strategy surrounding this will be discussed. The chapter discusses the justification for the present research, and why certain measures and research techniques were chosen. It is important that this research adheres to ethical guidelines and standards, as well as protects the individuals who partake in the study. This section outlines the steps taken to make sure the experiment was conducted as ethically as possible. Finally, the chapter examines the inventories and tools used to gather data from the participants.

The results chapter will discuss the outcomes of the research and what was gathered from a thorough interpretation of the data. After a short discussion of potential missing data and procedure of the analysis, the results will examine the demographic differences in the participants. The aims and hypothesis will next be discussed in turn. The chapter will conclude with an analysis of the participant attitudes toward social network sites, and whether there were differences between the pre-test and post-test.

The discussion chapter will then follow. This chapter first discusses the most important findings from the study and how these relate to relevant literature. This is ordered

according to the research hypotheses. Any alternative explanations available to explain the results are next discussed. The implications offered show the value in the current study and what potential benefits there may be in the application of these findings. Strengths and limitations are considered and discussed to outline what worked well, but what also needs to be accounted for in the future. Finally, while this research fills some gaps in the literature, recommendations for future research are discussed. This includes suggestions on what other researchers can do to account for any weaknesses of this study.

The final chapter concludes the thesis by presenting to the reader a recap of the research aims, methodologies and current state of the literature of the topics discussed wherein. The results are reiterated to provide evidence for or against the hypotheses made. The main interpretations and implications are again discussed and the thesis is brought to a conclusion with some recommendations for future research and final comments.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

As the use of social media has increased in recent years, so too has research investigating the potential consequences of its use. As will be discussed in detail below, social media use has been linked to increased rates of depression, anxiety, and stress, as well as eating disorders and sleep disorders. Problematic social media use has also been associated with poor emotion regulation strategies which can then also lead to adverse health outcomes.

This chapter consists of a literature review of recent research on social networks, mental health and emotion regulation. This chapter is organised into three separate sections, where each of the following topics are covered individually. The first section consists of a literature review on social networks. It introduces the main concepts that are used in this study, defines concepts, and provides context for this research. The second section discusses mental health with a particular focus on depression and anxiety. A New Zealand perspective is taken when possible, and overseas research discussed when necessary. The third and final section covers emotion regulation. Prominent theories are provided to give understanding to the concept of emotion regulation and how it is related to the previous two topics of this thesis.

2.2 Social Media and Networks

2.2.1 Introduction

This section consists of a literature review on the topic of social media. It begins by introducing and defining key terms that are used throughout the thesis. This provides an understanding of what a social network is and what key features they possess which separate them from other forms of interactive media. The main social network platforms are introduced and summarised. Each social network site is different and holds unique qualities that draw users to them. A discussion of how social network sites are used follows and this review introduces some popular theories on their use and what makes them appealing or useful to a wide audience. As these platforms are so ubiquitous within modern society, especially in New Zealand, it is important to understand the extent to which social network sites have an impact on the wellbeing of their users. This section includes the rise of technology and the internet, and the amount of people who regularly use this technology. Finally, this section concludes with research about some of the perils of social networking. This includes discussion of addiction, cyberbullying, and social comparison.

2.2.2 Definition and Key Features

It is important to first clarify the meaning of the terms ‘social media’ and ‘social networking’, and how they are used in this context. Sites such as Facebook, Twitter, and Myspace, are colloquially regarded as social media sites, however, in academic contexts, these are known as ‘social network sites’ (SNS; Settle, 2018). There are some key differences in SNS platforms versus social media platforms.

Social network sites are differentiated from social media as they allow users to create an easily accessible profile, populate their profile with a list of other users who share a connection, and view these other users' profiles within the site (Boyd & Ellison, 2007). Social media generally applies to a far wider variety of websites that still rely on user-generated content, including ones used for reference (such as Wikipedia) and entertainment (such as YouTube) (Kaplan & Haenlein, 2010).

Social media refers generally to a web-based platform that retains the social elements of SNS, but also offers its users a variety of media, such as audio and visual content, as its primary purpose (Kaplan & Haenlein, 2010). There are now a huge number of websites that would be considered social media, including video providers, such as YouTube, news agencies that allow users to create a profile and comment on articles, and music platforms such as Spotify where users can share music interests and playlists. However, as mentioned above, these are differentiated from SNS such as Facebook, as the primary purpose of these is the consumption of that platform's media rather than interacting with other users.

To further attempt to define SNS becomes difficult, as there are many platforms that might fall under this category and each one has a primary feature which distinguishes it from the others (Boyd & Ellison, 2007). Broadly speaking, SNS will feature a profile, created by the user, which will serve as an online representation of themselves (Settle, 2018). This identity is what will be projected to users viewing the profile, so content is carefully curated by the owner to produce a constructed identity, whether authentic to their real-life identity, or not. Facebook is an example of a site where a user's profile will represent them in real life, with a profile picture that will usually be an identifying photograph, a biography that will

include information such as age, location, and place of employment, and a selection of multimedia which the user might identify with and want to display publicly.

A ‘friends list’ is another key feature that will be included on the profile. This will often be made up of connections made outside of the platform and be publicly displayed so other users will be able to see and quantify the other users an individual interacts with (Boyd & Ellison, 2007; Settle, 2018). Platforms such as Facebook are predominantly used to maintain and solidify pre-existing relationships, rather than form new ones, hence why they are called ‘friends’ (Ellison, Steinfeld, & Lampe, 2007). Other platforms, such as Twitter, will label these connections ‘followers’ to imply a more casual relationship where users might not know each other personally, but ‘follow’ their updates like a fan or admirer.

Social network sites also feature systems where users can find and communicate with one another, usually with an inbuilt messaging and search system, similar to email. These features allow users to easily find each other and interact. Being able to contact other users effectively and quickly, using various channels and forms of multimedia often corresponds with a platform’s success. Once users find and connect with each other, they are able to communicate using a variety of ways, including writing messages on profiles, instant private messaging, video and audio calls, and sharing multimedia and files (Facebook, 2020b).

2.2.3 Main Platforms

Facebook is the most widely used SNS in the world with 2.4 billion active monthly users and 1.6 billion of them being daily users (Facebook, 2020b). In New Zealand. Facebook has 2.9 million active users, with 2.3 million of them logging in every day. New

Zealanders also check Facebook an average of 14 times each day, for a collective 50 minutes spent on the SNS (Gervai, 2017). As the most ubiquitous SNS, Facebook is often considered to be the prototypical platform as it utilizes many features that are common across many other SNS. These features include having a public profile, ability to find, connect, and interact with other users, and having an inbuilt instant messaging system that allows users an efficient and cheap method of communication (Nations, 2019a).

Instagram is another popular SNS platform in which users each have a profile made up of their own photos and videos. Profiles can be private and only be accessible by followers, or public in which anyone can view and interact with the profile. Other features include being able to connect with friends/family easily, inbuilt messaging systems, and being able to post 'stories' which remain on the profile for 24-hours before being permanently deleted (Moreau, 2019).

Twitter is a platform where the posts users make are typically visible to a wide audience. Users create a short message, limited now to 280 characters, add 'hashtags' or labels to categorise the message and provide context, the username of someone else in case the message is directed towards a person or organisation, and post to a worldwide message board. These 'tweets' are publicly visible by default and can be seen by any of the platforms 321 million users (Gil, 2019).

Snapchat is a SNS platform that features photo messaging as its main draw. After being sent, messages are typically displayed to the receiver for just a few moments before being permanently deleted (Snapchat, 2020).

Tinder is a SNS that is oriented towards dating and relationships. Users create a profile and then browse through other user's profiles. When two users 'match,' or agree to connect their profiles, they are able to then send messages to one another. Tinder serves a particular function in that users are generally there with the goal of meeting someone romantically (Tinder, n.d.).

Other social networking sites also attempt to fill niche communication and interaction needs. While sites like Facebook and Instagram allow real-life friends to share content with one another and easily communicate, other sites like LinkedIn allow users to generate a profile that can be easily shared with employers and colleagues to aid in professional development (Nations, 2019b). Soundcloud is a SNS where musicians can share and promote original music and interact with other musicians (Soundcloud, 2020), and DeviantArt is a similar platform for visual artists (DeviantArt, 2020). There are even SNS for pets, such as Catster and Dogster (Boyd & Ellison, 2007).

2.2.4 How Social Networks Are Used

Attempts have been made to categorise and organise social media in a systematic manner according to levels of media and social processes (Daft & Lengel, 1986; Goffman, 2010; Kaplan & Haenlein, 2010). Media research, or the amount and type of media that is available to be transmitted, has been described in several theories of communication.

According to Daft and Lengel (1986), media richness theory claims the goal of any communication is to resolve ambiguity and reduce uncertainty. Different forms of communication are 'richer' than others, in that they are able to provide more detailed

information based on the user's intended message, in a shorter period of time. Face-to-face interaction rates highly in its richness of the communication, while on the other end of the spectrum, impersonal written documents have a lower richness. A key feature of rich communication is the ability of the respondent to provide a response and resolve ambiguity (Daft & Lengel, 1986).

Closely related to the media richness theory by Daft and Lengel, (1986) is the social presence theory by Short, Williams, and Christie (1976, as cited in Kaplan & Haenlein, 2010). Social presence theory is described as the interacting levels of intimacy and immediacy of the medium of communication, and the subsequent power the medium has over influencing another person's behaviour. As the quality of communication and social presence increases, so does the influence the communication has over each party's behaviour. While these theories were developed in regard to more traditional forms of media, such as print, radio, and television, they apply just as well to social media and SNS. If placed on a social presence spectrum, asynchronous email exchange, for example, is on 3the low end of the spectrum and therefore would exert little influence on behaviour, as compared to face-to-face communication which is on the other end of the spectrum (Kaplan & Haenlein, 2010). Social network sites allow their users to contribute to their own self-image according to their own motives. The combination of a personalised profile, membership of an online community, variety of multimedia communication methods, and ubiquity and accessibility of the communication allow a higher social presence and richness of media than other interpersonal communication methods, such as telephone or email.

Goffman (2010) writes on how people present themselves to others and likens it to a performance by actors to an audience. The goal of the performer is to convince the audience

of their role and persuade them into feeling a certain way to receive a reward. This reflects the way in which SNS users create an online persona that is consistent with an image they aim to promote (Kaplan & Haenlein, 2010). This level of self-promotion can vary across each individual site. Facebook intends users to fill their profiles with factual information. In fact, using Facebook to represent anyone other than the users own authentic self is a violation of their terms of service (Facebook, 2020a). On the other end of the spectrum, virtual social worlds and games such as World of Warcraft encourage users to completely fabricate all information and virtually live out a fantasy character. This enables users to create an alter-ego in which their persona has no similarities to their authentic self (Kaplan & Haenlein, 2010). They will interact with other users in a virtual environment that resembles face-to-face talking while using a created and customized avatar. Kaplan and Haenlein (2010) have visualised a system to organise social media sites based on their levels of social disclosure/presentation and the richness of the media/social presence as shown in Table 2.1.

Table 2.1

Classification of social media by social presence/media richness and self-presentation/self-disclosure (Kaplan & Haenlein, 2010)

		Social presence/ Media richness		
		Low	Medium	High
Self-presentation/ Self-disclosure	High	Blogs	Social networking sites (e.g., Facebook)	Virtual social worlds (e.g., Second Life)
	Low	Collaborative projects (e.g., Wikipedia)	Content communities (e.g., YouTube)	Virtual game worlds (e.g., World of Warcraft)

Taking these theories into consideration, social media and social network site use becomes a way for users to interact with one another in varying ways of self-disclosure and presentation to achieve a goal. This goal will typically involve convincing their audience that their message is authentic and to resolve ambiguity.

2.2.5 Ubiquity of Social Media

While social media platforms have existed since the 1970s, recent societal changes in the form of increased access to affordable technology, increased commercial interest in the use of these platforms, and widespread social acceptance and willingness to engage has dramatically increased their use. According to the 2012 Census data, in New Zealand, four out of five people are regular users of the internet or had used the internet in the past 12 months. Of those regular users, 78% had accessed the internet in the past week (Bascand, 2013).

In a study by Hartnett (2017) on young people in New Zealand secondary schools, 93% of students had computer access at home, 89% had internet access at home and 93% had a personal cell phone. In interviews with some of these participants, they reported using these devices for social media and communication, internet browsing, visual media, and schoolwork. While these figures varied depending on what decile school the participants were from, they still show that internet use is an important aspect in the lives of young people and demonstrates the increase in internet use among young New Zealanders in particular.

According to Lai and Smith (2017), of the 768 New Zealand tertiary students who completed a survey about technology use in their learning, between 97.8% and 100% of the

participants (first-year undergraduate students, undergraduate students above first-year and postgraduate students) reported they were comfortable using computers and the internet for a variety of purposes. Of these participants, 89.2% first-year, 84.8% other undergraduate and 73.6% postgraduate students were frequent users of social media and related tools.

Studies consistently show that younger people are more regular users of technological devices and social network sites. Several authors have referred to this age group of predominantly young users as ‘digital natives’ or ‘screenagers’ as they have grown up with this technology being widely available (Kaplan & Haenlein, 2010; Lusk, 2013). Specifically, this refers to children, adolescents and young adults. As such, these age groups are most likely to maximise the benefits of the internet, while also being highest at risk of the potential downsides.

2.2.6 Cyberbullying

With the advent of accessible technological communication for all, one of the most tragic consequences is cyberbullying or bullying through the means of any electronic technology (Hogan & Strasburger, 2018). As with traditional bullying, cyberbullies inflict intentional harm and aggression to a victim who is in a position of disadvantage and cannot defend themselves (Langos, 2012). A key difference, however, is that since the perpetrators are able to attack their victims via the internet, or in other words practically anywhere and anonymously, this method of bullying becomes risk-free and easy to use (Campbell, Butler, & Kift, 2008).

According to Klijakovic, Hunt and Jose (2015), bullying is prevalent in New Zealand. Traditional and new (text- and internet-based) methods of bullying were examined among three cohorts of secondary school students over three years (N = 2,174). At the beginning of the study, 27% of students had stated they had been involved in bullying other students and 35% were reported to have been victims of bullying. Bullying via text message was the most common method of bullying (M = 1.43) while bullying via the internet was the fourth (M = 0.98). Meanwhile, victimization was second highest by text message (M =1.44) and fourth highest by the internet (M = 0.99) (Klijakovic et al., 2015). These rates appear to be consistent internationally (Fenaughty & Harré, 2013).

The trouble with investigating phenomena like bullying, however, is the willingness of participants to self-disclose their behaviour and experiences with bullying, especially as a perpetrator (Solberg & Olweus, 2003, as cited in Klijakovic et al., 2015). The participants' anonymity was protected in this study, however, but it is still unclear if these statistics reflect the true rate of cyberbullying (Klijakovic et al., 2015). Bullying is subjective, based on the perspective of the perpetrator or the victim. In other words, if the victim or perpetrator is unable to recognize the behaviour as bullying then it will not be reported as such. To obtain an accurate picture of the state of bullying, other sources should be consulted, such as teachers, peers, and parents, and the behaviour could be observed naturalistically.

The link between cyberbullying and negative consequences is well-known (Wolke & Lereya, 2015). Victims are more likely to develop somatic and psychosomatic problems, including common sicknesses, sleep disorders and headaches. They are also at a higher risk of developing anxiety and depressive disorders, as well as having a higher risk of attempted and completed suicide. Academic, employment and relationship problems are at a higher risk

of developing too. Bullies themselves are also at a greater risk for these problems, including the suicide behaviours (Hinduja & Patchin, 2010; Mark & Ratliffe, 2011; Wolke & Lereya, 2015).

Hinduja and Patchin (2010) conducted a study on 1,963 high school students in the United States to determine levels of suicide ideation and behaviour among cyberbullying and traditional bullying victims and perpetrators. They found that 20% of the total sample had at some point considered suicide and 19% had attempted suicide. Regarding likelihood to attempted suicide based on experiences of cyberbullying, the participants who had been a victim of cyberbullying were 1.94 times more likely to have made a suicide attempt and perpetrators were 1.49 times more likely than those who were not either cyberbullying offenders or victims. Among traditional bullying victims and offenders, the rates were 1.7 and 2.0, respectively (Hinduja & Patchin, 2010).

2.2.7 Social Comparison and Envy

There is increasing evidence that a major factor in the role of social network use and wellbeing is the degree to which people engage in social comparison (Lup, Trub, & Rosenthal, 2015). Social comparison refers to the tendency for one to compare themselves to others and potentially developing a feeling of envy or inferiority. In an online environment, this might result in a decreased self-esteem when looking at photos of attractive people, and quantifying friends as a measure of popularity. As people have selective self-presentation on their SNS profiles, they can choose to make their image appear according to what they would most like to emphasize (Gonzales & Hancock, 2011). According to attribution theory, other users will see this and attribute wealth, success or attractiveness to dispositional factors,

rather than situational factors. As such, they judge themselves more harshly without recognising that an online image is often chosen as it is likely to be the most attractive or image-enhancing among other alternatives (Lup et al., 2015). This can be seen in dating profiles where people make themselves look as good as possible to attract positive attention. Engaging in social comparison is then futile as a user's online persona does not necessarily match their true self.

High ratings of social comparison and envy have been associated with a range of mental health problems in SNS users. Increased depressive symptoms have been seen in users of Instagram, Facebook, and Snapchat when users report these feelings (Gonzales & Hancock, 2011; Lin & Utz, 2015; Lup et al., 2015; Tandoc, Ferrucci, & Duffy, 2015; Utz, Muscanell, & Khalid, 2015). There are also increasing concerns about the role of social networks in eating disorders (Saunders & Eaton, 2018; Turner & Lefevre, 2017). Due to the visual nature of many social networks like Instagram and Snapchat (i.e. photo-based communication), users become preoccupied with appearance. This is associated with body image concerns and negative social comparison and can lead to anorexia nervosa, binge eating disorder, and orthorexia nervosa (Saunders & Eaton, 2018; Turner & Lefevre, 2017).

2.2.8 Summary

To summarise this section, social media and social network sites were distinguished and defined according to vast differences in the way they are used. Social media sites are platforms where entertainment is the primary focus, although there are social communication features. Social network sites are online platforms where users create an online profile which does or does not represent their 'authentic self,' which they then use to communicate with

others. The main platforms Facebook, Instagram, Snapchat and more, each have features that differentiate themselves from other platforms to provide a unique benefit to its users. The reasons why people use social networking include a way to maintain an online presence and engage in effective and efficient communication with others. Social network sites are now ubiquitous, and research has shown how commonplace it is for a variety of different social groups to use social network sites. Finally, some perils of social network use were presented. These include the prevalence of cyberbullying, and the tendency for some users to engage in social comparison, which can lead to poor mental health outcomes such as depression and eating disorders.

2.3 Mental Health and Wellbeing

In this section a brief review of the international literature pertaining to the potential mental health impacts of social media use will be provided.

2.3.1 Introduction

Depression and anxiety are serious and prevalent psychiatric disorders that can have serious impacts on an individual in many different domains and can lead to severely reduced life satisfaction, opportunities and death (World Health Organisation, 2018b). Part of the focus of examining an individual's sense of mental health and wellbeing is to establish their current mood and levels of depressive, anxiety and stress symptoms (World Health Organisation, 2018b). This section describes depression and anxiety disorders and addiction as it relates to internet and social network use. The incidence both in New Zealand and

internationally is discussed, comorbidity with other mental illnesses and finally the relationship with technology use.

2.3.2 Depression

Depressive disorders most commonly refer to major depressive disorder (MDD), but also refer to persistent depressive disorder (dysthymia), premenstrual dysphoric disorder, and substance/medication-induced depressive disorder, among others (American Psychiatric Association, 2013). In the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* (DSM-5), depression symptoms include low mood, diminished pleasure from activities, weight loss or gain, feelings of worthlessness or guilt, and thoughts of death and suicide. These symptoms are persistent, cause interference in everyday functioning, and are not attributable to substance or medical conditions (APA, 2013).

Diagnosis of depression, anxiety, and related disorders typically require a trained clinician to make an assessment after administering a range of structured and semi-structured questions. Self-assessment tools, such as the Depression, Anxiety, and Stress Scale (DASS) or Beck Depression Inventory (BDI) can be used in these clinical settings to aid assessment or screen clients, however these tools are typically used in research to determine the psychological state of participants (Vahedi & Zannella, 2019). For this reason, simplified summaries of depression and anxiety are classified as mild, moderate, or severe (World Health Organisation, 2018b).

2.3.3. Incidence of Depressive Disorders

Depression is a common mental disorder internationally, with 300 million people affected worldwide, according to the World Health Organization (WHO; 2018a). A further 800,000 people die every year from suicide, many of which would meet the criteria for a depression diagnosis, making it one of the leading causes of death (WHO, 2018a).

The Te Rau Hinengaro: New Zealand Mental Health Survey provides detailed information about serious mental disorders among those aged 16 and older in various sociodemographic groups in New Zealand (Oakley-Browne, Wells, & Scott, 2006). Among the key aims were to determine the monthly, yearly and lifetime prevalence, patterns of and barriers to health support services, the levels of disability associated with a mental disorder, and provide baseline data to inform future health planning and development (Oakley-Browne et al., 2006). Results show that 20.2% of New Zealanders will experience a mood disorder in their lifetime (95% CI = 19.3 to 21.1), 7.9% in a twelve-month period (95% CI = 7.3 to 8.7), and 2.3% each month (95% CI = 2.1 to 2.7) (Oakley-Browne et al., 2006). Of those experiencing mood disorders in a twelve-month period, 5.7% had MDD, 2.2% had Bipolar I or II disorder, and 1.1% had dysthymia, and 40.2% of cases were serious, 50.3% moderate and 9.5% mild (Oakley-Browne et al., 2006).

In Oakley-Browne and colleagues' research (2006), New Zealanders aged 16 to 24 were at the highest risk for developing a mood disorder, with a twelve-month prevalence of 12.7% (95% CI = 10.4 to 15.4), while those aged 65 and over had the lowest prevalence with 2.0% (95% CI = 1.5 to 2.7). There were also different rates for gender, with mood disorders being more common in females over a twelve-month period (9.5%) than for males (6.3%).

The lifetime prevalence for mood disorders also showed high rates across all ages and sexes, although, with those aged 16 to 24 having a 20.7% prevalence (95% CI = 18.1 to 23.7), older age groups had higher prevalence rates with 25 to 44-year-olds being 22.2% (95% CI = 20.8 to 23.7), 45 to 64-year-olds with 22.0% (95% CI = 20.4 to 23.6), and 65 and older being 10.6% (95% CI = 9.3 to 12.2). Again, females had a higher lifetime prevalence with 24.3% (95% CI = 23.1 to 25.6), and males with 15.6% (95% CI = 14.4 to 16.9) (Oakley-Browne et al., 2006).

Māori populations are the most likely ethnic group in New Zealand to be diagnosed with a mood disorder, while Pacific populations are the least likely (Oakley-Browne et al., 2006). The unadjusted twelve-month prevalence for Māori with all mood disorders is 11.6% (95% CI = 10.1 to 13.2), Pacific is 8.3% (95% CI = 6.6 to 10.0), and other New Zealand groups is 7.5% (95% CI = 6.8 to 8.2).

Making direct comparisons between studies of ethnic mental health in New Zealand and elsewhere becomes difficult due to differing methodologies, prevalence types (one-month, twelve-months, lifetime), measurement, and sample (Black, Kisely, Alichniewicz, & Toombs, 2017). Black and colleagues (2017) present a meta-analysis of mood and anxiety rates in indigenous populations of New Zealand and Australia. What they find is that Māori are much more likely to develop depression than non-indigenous controls (*OR* = 1.88). However, this is based on just three studies and only two of them were representative of the community, one being an epidemiological study and the other being a birth cohort study (Black et al., 2017). The other issue in looking at rates of mood disorders involves differing conceptions of health according to different groups and measurement tools that are unable to

sufficiently account for this (Black et al., 2017; Macfarlane, 2016; Levy, 2016). Additionally, socioeconomic differences between groups in each study may further confound the results, exaggerating or minimising differences in health between Māori and non-Māori.

2.3.4. Anxiety

According to the DSM-5, anxiety disorders are a group of disorders that share the characteristics of excessive fear and worry, physiological changes including increased blood pressure, sweating, muscle tension and trembling, and behavioural changes that seek to avoid a perceived threat (APA, 2013). While certain fear responses are typical and expected in most situations, people with anxiety disorders often have an exaggerated response to perceived threats and these feelings are persistent (typically lasting 6 or more months).

2.3.5. Incidence of Anxiety Disorders

The Te Rau Hinengaro (Oakley-Browne et al., 2006) presents statistics about anxiety disorders in the New Zealand population. There is a lifetime prevalence rate for any anxiety disorder of 24.9% (95% CI = 23.6 to 26.2), making it the most common type of mental disorder that affects New Zealand. The twelve-month prevalence is 14.8% (95% CI = 13.9 to 15.7) making it almost twice as common as depressive disorders over a one-year period. Monthly, anxiety disorders affect 9.3% of the population, making it four times more common than depressive disorders (95% CI = 8.6 to 10.1). Specific phobias and social phobias were the most commonly experienced anxiety disorders, yearly (7.3% and 5.1%, respectively). Severity rates for anxiety rates were 23.8% for serious, 43.3% for medium, and 32.9% for mild (Oakley-Browne et al., 2006).

These statistics again mirror that of depression, in which females are disproportionately affected over twelve-months (18.6%, 95% CI = 17.3 to 20.0) compared to males (10.7%, 95% CI = 9.5 to 12.0), and over the lifetime (29.4%, 95% CI = 27.7 to 31.3 compared to 19.9%, 95% CI = 18.3 to 21.7) (Oakley-Browne et al., 2006). Those aged 16-24 and 25-44 are also the age groups most affected by anxiety disorders in twelve-month periods (17.7%, 95% CI = 15.1 to 20.6, and 18.2%, 95% CI = 16.6 to 19.9, respectively).

Māori also have higher rates of anxiety disorders in New Zealand, with an unadjusted, twelve-month prevalence of 19.4% (95% CI = 17.1 to 21.7), while Pacific populations had 16.3% (95% CI = 13.8 to 18.9) and the rest of New Zealand was 14.1% (95% CI = 13.0 to 15.1).

2.3.6 Depressive and Anxiety Disorders in Tertiary Students

Samaranayake, Arroll, and Fernando (2014) conducted a study in which they investigated the quality of sleep and rates of depression, anxiety and life satisfaction among tertiary students in New Zealand. Their sample consisted of 1933 students (63.9% female) with a mean age of 20 (range 16-30). Using a customised scale to measure sleep disorders, depression, anxiety and alcohol use, Samaranayake and colleagues (2014) found that clinically significant depression was found in 17.3% of the sample, and anxiety in 19.7%. Consistent with the population data of the Te Rau Hinengaro (Oakley-Browne et al., 2006), female students had higher rates of depression than male students (19.7% versus 12.9%, respectively), and again for anxiety (22.9% versus 14%). There are differences from the general population of New Zealand, in that overall rates of depression and anxiety are lower.

However, this could be accounted for by some study limitations which include the lack of a randomized sample and having localized the sample to just four Auckland universities (Samaranayake et al., 2014). Other confounding variables exist in using students as a sample, including acute stressors such as exams and assignments.

Depression and anxiety are prevalent in New Zealand and worldwide. While the exact figure varies between location and study, generally about a fifth of a given population will be experiencing depression or anxiety at any given time. The next section will discuss these disorders as they relate to technology use, and specifically social network site use.

2.3.7 Addiction to Internet and Social Network Sites

As technology has now allowed people nearly constant access to the internet, devices, media, and communication, there are concerns about whether too much access is problematic, especially for those prone to addiction. Addiction in this context does not refer to any dependence on a substance as in a chemical or intoxicant addiction, but rather an impulse-control disorder similar to a gambling addiction (Young, 1998). Internet addiction as defined by Young (1998) is based on a modified version of the pathological gambling definition in the DSM-4, and includes the symptoms of preoccupation with the activity, increasing time spent on the activity, withdrawal symptoms, failure to control or reduce, staying online longer than intended, functional impairment, lying, and as a source of escapism.

A definition for internet addiction does not yet exist in the Diagnostic and Statistical Manual of Mental Disorders 5th Edition (DSM-5; APA, 2013), nor in the International Classification of Diseases 11th Edition (ICD-11; WHO, 2018b). There does exist, however,

the similar condition of Internet Gaming Disorder, where there is impaired control over gaming behaviour and prioritization over other activities to the extent where it impairs functioning in daily activities and other interests (WHO, 2018b). While this definition encapsulates the core features of internet addiction among those who may be defined as such, the DSM-5 specifically distinguishes this disorder from those who use the internet for business and professional use, recreation and social use, and sexual use (APA, 2013).

The current lack of an operational definition for internet addiction disorders is an area that needs attention and consideration for being included in the next edition of the DSM (Ko, Yen, Yen, Chen, & Chen, 2012). In a survey of 243 psychiatrists carried out across Australia and New Zealand, 24.28% agreed or strongly agreed that Problematic Internet Use needed to be added into future editions of the DSM or ICD, with a further 44.44% saying that it may need to be included (Dullur & Hay, 2017).

Ko and colleagues (2012) present a review of studies researching the link between internet addiction and mental disorders using the definition provided by Young (1998). They found that internet addiction shares a close relationship to depressive disorders, anxiety-related disorders, attention-deficit hyperactivity disorder, aggression and other psychiatric diagnoses. However, the causal relationships were not able to be determined for any of the studies reviewed.

An important question to be resolved is whether the addictive nature of this technology is rooted in the SNS itself or if people are addicted to the technology that provides it. In other words, do people get addicted to social networking or are they just addicted to their phones? Barnes, Pressey, and Scornavacca (2019) conducted a study to be

among the first to attempt to answer this. Using measures of cognitive absorption to determine levels of addiction to smartphones and SNS, they surveyed 140 college students in the United States (68.6% female, 75% under 34-years-old). Cognitive absorption refers to a state of intrinsic motivation to engage with an activity, in this case SNS or smartphones (Agarwhal & Karahanna, 2000). The five dimensions of cognitive absorption which guide the measure of internet addiction include: temporal dissociation ("the inability to register the passage of time while engaged in interaction"), focused immersion ("the experience of total engagement where other attentional demands are, in essence, ignored"), heightened enjoyment ("capturing the pleasurable aspects of the interaction"), control ("representing the user's perception of being in charge of the interaction"), and curiosity ("tapping into the extent the experience arouses the individual's sensory and cognitive curiosity") (Agarwhal & Karahanna, 2000, p. 673). The results of Barnes and colleagues' study (2019) show that smartphone addiction is stronger than SNS addiction ($p < .001$, $M_{smartphone\_addiction} = 25.43$, $M_{SNS\_addiction} = 21.99$). When looking at cognitive absorption, the impact is stronger on SNS addiction than for smartphone addiction. These effects remain significant when factoring in age, gender, and education, however, level of education does impact smartphone addiction. Finally, while cognitive absorption was shown to mediate addiction to SNS, the effects carried through to smartphone addiction. This implies smartphone addiction is driven by the extent to which people are addicted to SNS (Barnes, et al, 2019).

Limitations of this study prevent the results from being completely generalised to a New Zealand context (Barnes, et al, 2019). As the participants came from a small American student sample, there may be significant differences. Internal validity concerns are also raised over the reliability of the self-report measures that the participants used.

As social media and internet addiction remain undefined, researchers are using guidelines from similar impulse-control disorders, such as gambling disorder, as a working definition to measure and research addictive behaviours in social network use. As such, there needs to be more attention drawn to how to assess, diagnose, and treat people who cannot regulate their social network site use.

2.3.8 Wellbeing and Technology Use

Mental disorders, such as anxiety and depression, have been demonstrated in recent literature to have a link with high SNS, internet and smartphone use (Allcott, Braghieri, Eichmeyer, & Gentzkow, 2019; Baker & Algorta, 2016; Elhai, Hall, & Erwin, 2018a; Ko et al., 2012; Lup, Trub, & Rosenthal, 2015; Shakya & Christakis, 2017; Tandoc, Ferucci, & Duffy, 2015; Twenge et al, 2018a; Vahedi & Zannella, 2019). This effect has been demonstrated in some studies using self-report measures of subjective wellbeing (Kross et al., 2013; Shakya & Christakis, 2017), and in objective measures of mental disorder (Ko et al., 2012; Twenge et al., 2018a). Some reviews did find that links between mental disorder and SNS use were inconclusive (Baker & Algorta, 2016), or that this interaction is not understood well enough to say that one causes the other (Heffer, Good, Daly, MacDonell, & Willoughby, 2019). These studies are examined later in this chapter.

Starting broadly, Twenge and colleagues (2018a) conducted a survey to investigate the links between depressive symptoms, suicide, and new media screen time. New media in this context refers to electronic devices, including tablets, smartphones, and personal computers, social media sites, and internet-based news websites. Based on the data of two nationally representative surveys across the United States, Twenge and colleagues (2018a)

analysed the responses of 506,820 adolescents at two time-points. The surveys included questions gauging screen time across a variety of devices, use of social media and SNS, and how the participants spent their time away from technology, for example playing outside, employed, homework, spending time with others, etc. The surveys also included questions about depressive symptoms and suicide-related outcomes (Twenge et al., 2018a).

The authors found that depression and suicide-related outcomes and deaths were increased significantly in those who spent larger amounts of time on on-screen activities and on SNS websites, as compared to those who spent more time on non-screen activities, including print media (Twenge et al., 2018a). These correlations were stronger for females than for males, suggesting that females receive more negative effects for their social media and technology use. The risk for depression and suicide-related outcomes increased for every hour on average spent on on-screen activities each day, where 33% of adolescents who spent 2 hours a day on-screen had a suicide-related outcome. This is compared to the 29% of adolescents who used electronic devices for 1 hour on average each day. Adolescents who were using electronic devices for more than 5 hours each day were 66% more likely to have a suicide-related outcome (Twenge et al., 2018a).

Aware that engagement on social media is a functionally social activity, the authors examined the links between SNS engagement and in-person interactions (Twenge et al., 2018a). The data suggests that harmful social media use is mediated by levels of in-person social interactions. Those who had high levels of social interaction both on social media and in-person had lower rates of depression and suicide-related outcomes. In contrast, those with low in-person interaction but high social media use had higher levels of depression and suicide-related outcomes (Twenge et al., 2018a).

In examining trends over the 2010-2015 period, Twenge and colleagues (2018b) matched increasing rates of new media screen time with increases in depression and suicide-related outcomes in the sample population. The authors point out that mental disorders were starting to increase in 2011-2012, at the point where smartphones were owned by about half of Americans (Smith, 2017, as cited in Twenge et al., 2018b). Where smartphone ownership reached 92% in 2015, the rates of depression and suicide peaked. The authors acknowledge the gravity of claiming that depression increased because of smartphone ownership, and that there could be other confounding factors (Twenge et al., 2018b). They did rule out economic factors having a role in the increasing rates, and even show that suicide rates were lowest among the sample in times of economic hardship. Increasing levels of stress and larger demands in school were also addressed, however the data points towards better mental health for those students who spent more time working on homework (Twenge et al., 2018b).

An empirical reply to Twenge and colleagues (2018a) was conducted by Heffer and colleagues (2019) in which they criticised the limitations of the previous study and sought to replicate its conclusions. A direct link between screen time and depressive symptoms was not able to be established from Twenge and colleagues (2018a) data, and other confounding variables were unaccounted for. In other words, it is not determined sufficiently whether total screen use or social media use causes depressive symptoms, depressive symptoms increase screen and social media use, or something else is influencing both variables.

Heffer, Good, Daly, MacDonell, and Willoughby (2019) then conducted a longitudinal study with two large samples from Ontario, Canada. The first sample consisted of 594 adolescents over a two year period, and the second was 1,132 undergraduate students

over six years. Both groups were surveyed regularly throughout the time-periods and the direction of relationships were tested. Consistent with Twenge and colleagues (2018a), measures and variables were largely kept the same, although some were altered for greater accuracy in data collection, such as time spent on social media was narrowed to hours spent each day rather than times accessed each week (Heffer et al., 2019; Twenge et al., 2018a).

The results of Heffer and colleagues (2019) study contradict the results of Twenge and colleagues (2018a) by showing that social media use did not predict depressive symptoms in females and that there were no significant directional relationships between social media use and depressive symptoms in young adults. A significant unidirectional relationship was found for adolescent males in greater social media use predicting depressive symptoms. However, this was removed when covariates such as age and other demographics were accounted for. A relationship was also found for adolescent females where more depressive symptoms predicted increased social media use at a later time (Heffer et al., 2019).

Further limitations are acknowledged by Heffer and colleagues (2019) in that their samples are smaller and more homogenous, while in Twenge and colleagues (2018a) the data was nationally representative. They also were unable to determine whether there was any effect from an unaccounted for third variable.

Further research has sought to answer if specific SNS platforms have an effect on wellbeing. Kross and colleagues (2013) tried to determine if Facebook use would cause increases or decreases in subjective wellbeing and life satisfaction. From a sample of 82 (M_{age} = 19.2, 53 Females), they completed a pre-test of questionnaires that measured wellbeing and

life satisfaction, and then a post-test 14 days later which consisted of the same questionnaire. During the 14-day period, each participant received 5 text messages at random times each day. These texts included a link to an online survey which could be accessed from their smartphone. The survey included questions about current mood, how much time was spent on Facebook since the last time asked, and how much time was spent interacting with others since the last time asked. This design allowed the researchers to measure different variables at several times throughout the day and predict affect based on Facebook use (Kross et al., 2013).

Kross and colleagues (2013) found that increased Facebook use at the first test (T1) predicted decreases in subjective well-being at the second test 14 days later (T2) ($p < .0001$). However, they did not find a significant relationship between subjective well-being at T1 and Facebook use at T2 ($p = .82$). This provides more evidence for the unidirectional relationship of SNS use and well-being, but not with the opposite direction, as suggested by Heffer and colleagues (2019). Increased Facebook use also predicted decreases in life satisfaction at the 14 day post-test survey ($p = .02$).

In a more recent study by Shakya and Christakis (2017), the effects of Facebook use on self-reported physical and mental health, life satisfaction and body mass index was investigated. They used data from three large waves of nationally representative samples totaling 5,208 participants with a mean age of 48 years. Rather than looking at time spent on Facebook each day, they examined participants' friend counts, the number of posts they had ‘liked’ in the past 30 days and over the lifetime of Facebook use, and the number of status updates they posted in the last 30 days.

Shakya and Christakis (2017) found that for each standard deviation increase in lifetime like count, 30 day like count, and 30 day status updates, mental health dropped by 7% of a standard deviation, 8% of a standard deviation, and 5% of a standard deviation, respectively. Furthermore, they also found that increased Facebook use was associated with decreased life satisfaction and more physical health problems (Shakya & Christakis, 2017). Having more Facebook friends was the only measure which was related to better mental health, especially if the participant actively interacted with them on a regular basis and felt like they had a close relationship with them.

There are several limitations, however. Firstly, as the samples of participants needed to provide researchers with access to their Facebook accounts, this caused many to decline to be involved. Those that accepted tended to be younger, female, and have a higher education level. Participants were also recruited from American households. (Shakya & Christakis, 2017). This raises the question of how generalisable these results are to other contexts, including New Zealand. Secondly, the surveys again relied on self-report measures. This could have skewed results according to response biases of the participants. Thirdly, there was no exploration of any possible third factor influencing well-being. Finally, the results suggest that Facebook use has a close relationship with wellbeing, but again, this study, as with Twenge and colleagues (2018a), only tested the direction of SNS use leading to declines in well-being and not the other way around (Heffer et al., 2019).

In what may be now considered the largest study of Facebook use on ratings of wellbeing, as well as political engagement, knowledge and polarization, Allcott and colleagues (2019) used Facebook advertisements to recruit a large sample of American participants. Of the 1.7 million people who were exposed to the advertisement for the study,

1,661 completed the endline impact evaluation. The authors of this study first asked participants if they would be willing to delete their Facebook for 24-hours. Of those who agreed, the authors asked if participants would be willing to have their Facebook deleted for a further 4-weeks. The timing was carefully chosen by the authors to run alongside the 2018 US Mid-term elections, and thus provide interesting data on participants political knowledge. Using the same process again, the participants were now randomly selected to delete their Facebook accounts for another 4-weeks (based on those who said they were willing to do so). Surveys were completed at the baseline, midline, endline, and post-endline which asked about subjective well-being, as well as political knowledge, etc. The post-endline survey also included questions about opinions on Facebook and participants' changes in use. To validate compliance, the authors sent text messages to participants every day which asked them to rate their moods, and continuous checks were made to each participant's Facebook account to ensure they had remained inactive (Allcott et al., 2019).

The design of this study allowed the researchers to see if reducing Facebook use to zero would result in better health outcomes, rather than the opposite design of previous studies that investigated whether increased Facebook use would lead to worse outcomes (Allcott et al., 2019; Heffer et al., 2019; Kross et al., 2013; Shakya & Christakis, 2017; Twenge et al., 2018a).

Allcott and colleagues (2019) found that deactivation of Facebook resulted in increases in participants subjective well-being, with the largest effects being on life satisfaction with .12 standard deviations (SD), anxiety with .10 SD, depression with .09 SD, and happiness with .08 SD. Overall subjective wellbeing increased by .09 SD. Alcott and colleagues decided to compare these results to benchmark tests in order to determine the

strength of these effects, such as that of positive psychology interventions such as individual therapy, group training, self-help therapy, which increase subjective wellbeing by .34 SD and reduce depression by .23 SD (Bolier et al., 2013, as cited in Allcott et al., 2019). Therefore, Facebook deactivation results in about 25-40% of the gains that you would receive from traditional psychological interventions.

As another benchmark to display the value of deactivating Facebook, Allcott and colleagues (2019) looked at demographic information, namely that of income and education level. Their data shows that those who graduated from a tertiary level education had .23 SD higher subjective wellbeing than everyone else. Deactivating Facebook is therefore almost half as powerful effect on wellbeing as attaining a university degree. Finally, for each $10,000 increase in income an individual receives each year, their subjective wellbeing increased about .027 SD. Facebook deactivation can then be comparable to a $30,000 dollar raise in yearly income.

Participants of Allcott and colleagues (2019) offered descriptions of their experiences in follow-up interviews. One participant shared these thoughts (Allcott et al., 2019, p. 24):

> *"I was way less stressed. I wasn't attached to my phone as much as I was before. And I found I didn't really care so much about things that were happening [online] because I was more focused on my own life... I felt more content. I think I was in a better mood generally. I thought I would miss seeing everyone's day-to-day activities... I really didn't miss it at all."*

Many other participants were reported to have shared these feelings of unambiguous positivity as a result of deactivating Facebook. These feelings persisted and many participants continued to have Facebook deactivated after the study had finished, at a rate of three times more than the control group (Allcott et al., 2019). This continued reduced demand to access Facebook post-experiment suggests an element of addiction in peoples use of Facebook.

While Facebook is the largest and most commonly used SNS, there are concerns relating to less popular platforms. Instagram is one such platform that has been accused of playing a central role in the development of eating-disorders (Saunders & Eaton, 2018; Turner & Lefevre, 2017), lowered self-esteem (Martinez-Pecino & Garcia-Gavilán, 2019), and depression (Lup et al., 2015). The nature of Instagram means users are usually following friends or celebrities that are promoting beauty and fitness products, trending lifestyles, holiday photos, and social events. These can trigger feelings of jealousy, resentment, loneliness, and can lead to relationship problems (Lup et al., 2015; Saunders & Eaton, 2018).

Lup and colleagues (2015) conducted one of the earliest studies to explore Instagram use and negative effects among American young adults ($N = 117$, $M_{age} = 24.81$ years, 84% Female). The authors measured daily Instagram use, the amount of strangers followed, ratings of social comparison, and depressive symptoms. The results showed that daily Instagram use had a marginally insignificant positive effect on depressive symptoms ($p = 0.066$) and that increased social comparison was positively associated with depressive symptoms. The results also showed that as the number of strangers followed increased, so too did ratings of higher social comparison. This then indirectly affected ratings of depression. Lup and colleagues (2015) used this evidence to state that the most important aspects of healthy SNS use is how its users engage in comparing themselves to others, rather than time

spent on the SNS. In other words, in this study, it is the quality of SNS use that is the most determining factor, rather than the quantity of use.

2.3.9 Summary

This section of the literature review covered mental health and its relationship with technology. As a cause for concern for mental health professionals in New Zealand and world-wide depression and anxiety are two major mental health problems with potentially serious consequences. Depression and anxiety were defined according to international guidelines and their incidence nationally and internationally was discussed. This literature review examined the relationship depression, anxiety and addiction has with the use of technology and specifically the use of social networks. The current research shows that while there are clear links they are poorly understood and guidelines for healthy use of social media are inconsistent. This review discussed these issues and some of the theoretical approaches used when researching mental health and the use of technology.

2.4 Emotion Regulation

Emotion regulation refers to the ability to respond to a situation by inhibiting, initiating or modulating emotional states or behaviour (Gross, 2014). Emotions are regulated by various strategies to achieve different goals; however, some strategies are more effective than others, and with prolonged use can lead to complications in mental health and cognitive functioning (Gross, 2014).

2.4.1 Introduction

This section explores the concepts and theoretical approaches of emotion regulation. It begins with broad definitions of emotion regulation, then narrows down to describe individual processes according to major theories. Two of the most important regulation strategies, expressive suppression and cognitive reappraisal, are then described in detail. Their relationship with mental health is explored using the literature. Emotion regulation tends to be a life-long process, where differences exist between different age groups. These differences are then described in the next section. Different theoretical approaches to emotion regulation are explored as they are conceptualised by other researchers. Finally, emotion regulation and its relationship with technology and social networks is examined and prior studies evaluated.

2.4.2 Overview

Navigating the vast complexities of the emotional experience requires an arsenal of cognitive tools and behavioural techniques. The most visible emotions - happiness, sadness, and anger - require regulation strategies that have evolved throughout history to deal with situations appropriately and effectively (Gross, 2014). Emotions mediate how well we direct attention towards specific tasks, process information, behaviourally respond to situations, conduct ourselves in social circumstances, and remember details of an event. In any of these situations, emotions are regulated through various strategies. This involves adjusting, controlling, and choosing the correct emotional responses in order to optimally navigate situations (Gross & John, 2003). Therefore, emotional regulation in this case refers to how emotions themselves are regulated, rather than how emotions impact the situation one finds themselves in (Gross, 2014).

While regulating emotions serves a purpose and can be accomplished in a number of ways, Gross (2014) describes three of its core features. The first is the activation of a goal. This can be accomplished by activating emotions in oneself or intrinsically. Or this can be accomplished extrinsically by activating emotions in someone else. For example, Person A watching a happy movie to improve their mood would be a case of intrinsic emotion regulation, while Person A complimenting Person B on their appearance to cheer them up is a case of extrinsic emotion regulation. The second core feature is the "engagement of the processes that are responsible for altering the emotion trajectory" (Gross, 2014, p. 6) or put more simply, the strategy used. This can be explicit, as in a conscious effort to influence the emotions one has in a situation, for example if someone was choosing to look on the bright side of a bad situation. Alternatively, this engagement can be implicit, or an unconscious effort, such as automatically averting your attention in a gruesome movie scene. The third and final core feature is the impact on emotion dynamics or the outcome. Different situations will cause different magnitudes, durations and offset of responses in the experiential, physical and behavioural domains (Thompson, 1990, as cited in Gross, 2014).

It is important to consider the processes of emotion regulation and how strategies differ from one another. In a process model of emotion regulation developed by Gross (2014), there are five identified points in emotion and information processing. As shown in Figure 2.1, these processes from left to right are situation selection, situation modification, attentional deployment, cognitive change, and response modulation. These represent the chronological order in which they occur.

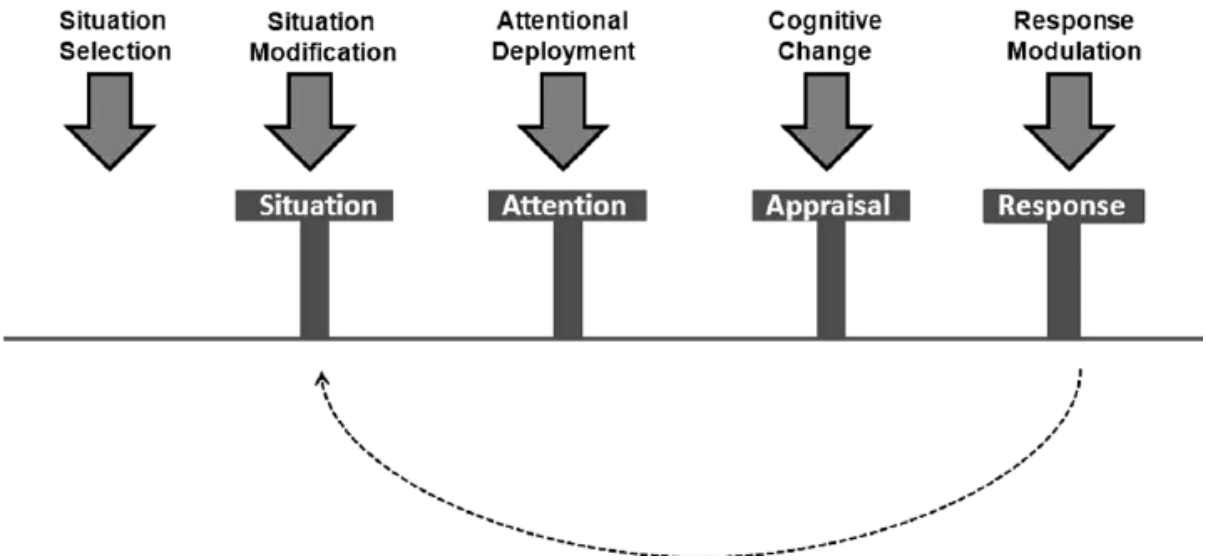

Figure 2.1. The process model of emotion regulation (Gross, 2014)

This process model of emotion regulation builds upon the modal model of emotion, also developed by Gross (1998) and Barrett, Ochsner and Gross (2007, as cited in Gross, 2014). This model states that emotions involve a transaction between people and situations, this transaction requires attention, the situation is then evaluated according to current goals, and a multifaceted response is elicited which will then modify the ongoing person-situation transaction. After a response is provided, this in turn alters the situation and the cycle is repeated.

The motivations behind regulating emotion to achieve desired outcomes are built upon this understanding of processes and features. Often in regulating emotions, people will want to maximise positive emotions and minimise negative ones. However, there are situations in which negative emotions are desirable, such as intentionally building stress in order to be motivated to study for an exam, or when positive emotions should be avoided, like telling jokes at a funeral (Gross, 2014). These emotion regulation tactics can again be

intrinsic or extrinsic and can be motived by instrumental goals or wider cultural considerations and norms (Gross, 2014).

To achieve the wide variety of outcomes that emotion regulation can have on oneself and others, individuals use specific strategies. Gross (2014) outlines five emotion regulation strategies which reflect the five families of regulation processes, as in Figure 2.1. The first and most readily used is situation selection. This involves acting to place or removing oneself in a situation which will produce a desirable or undesirable emotional outcome (Gross, 2014). While this tactic is easily used, it can be difficult in many cases to predict the emotional outcome of being involved in certain situations.

The next tactic is situation modification. This is where the environment, whether internal or external, is altered and so is the emotional impact. In modifying the context of a situation, this can bring about a completely new situation, taking on the form of situation selection. This has been previously described in research as problem-focused coping (Lazarus & Folkman, 1984, as cited in Gross, 2015) or primary control (Rothbaum, Weisz, & Snyder, 1982, as cited in Gross, 2015).

Attentional deployment is a strategy that enables people to redirect their attention to other aspects of a situation, with the most common methods being distraction and concentration (Gross, 2014; Webb, Miles, & Sheeran, 2012). Distraction can allow people to focus their attention elsewhere to avoid eliciting certain emotions. This strategy is mostly used in situations that cannot be modified or avoided; thus it is one of the earliest strategies learned by people. This distraction can be externally displayed, or internally as people change their thoughts or memories intentionally (Gross, 2014). Concentration, on the other hand,

describes the individual focusing attention on their emotions, causes, and impacts (Webb et al., 2012). How these terms are operationalised depends on the study, as distraction can be described as active or passive, and neutral or positive (Webb et al., 2012). Active distraction refers to intentional efforts to distract oneself from an emotion-eliciting activity, as described in Masuda and colleagues (2010) research, where participants were explicitly told to think pleasant or neutral thoughts. Passive distraction refers to those who become distracted from activities, even though they have been instructed to complete another activity (Donaldson & Lam, 2004).

One of the most effective emotion regulation strategies is cognitive change (Webb et al., 2012). This refers to a conscious effort to modify the way one thinks about a situation in order to change its emotional impact and/or significance (Gross, 2015). This method occurs early in the process of emotion regulation before responses are generated (Gross & John, 2003). Cognitive reappraisal is a method of cognitive change that has had a large amount of attention in research and will be described in more detail later in this chapter. The wealth of research on antecedent-focused responses such as cognitive change and attentional deployment, rather than situation modification or selection, reflects assumptions that people in experimental conditions are unable to separate themselves from the emotion-eliciting situation (Webb et al., 2012).

The fifth and last regulation strategy is response modulation, and this is typically the last in the sequence of the emotion regulation process. Response modulation refers to the behaviours after which the emotion has been generated. Expressive suppression is the alternatively well-studied response mechanism that people use commonly and will again be described in more detail later in the chapter as it is another primary focus of this, and prior

research. Suppression of the emotion response usually looks like behaviours that inhibit the ongoing negative or positive emotions. As this regulation strategy can be studied by observing how emotions develop in experimental conditions, it is similarly well-researched (Webb et al., 2012).

2.4.3 Cognitive Reappraisal

John and Gross (2004), two influential researchers of emotion regulation, identified cognitive reappraisal and expressive suppression as two of the most important regulation strategies to be studied. Cognitive reappraisal refers to attempts to modify one's interpretation of an emotion eliciting event in order to maximise positive affect and minimise any negative impact. This often takes the form of reframing situations to lessen harmful thoughts (e.g. if I fail this test, it's not the end of the world) (Gross, 2015). In contrast, expressive suppression refers to directly influencing the response of the emotion after it has already been developed. The mechanism of response modulation can be achieved in a variety of ways. Drugs and alcohol are an effective way to alter emotional states, while deep breathing and exercise can also control the physiological response to an emotion eliciting event (Gross, 2015).

There are four cognitive reappraisal strategies identified by Webb and colleagues (2012) in their meta-analysis of 207 studies examining emotion regulation strategies and whether their manipulation would result in different effects in various situations. These four strategies of cognitive change as an antecedent to the emotion-eliciting situation differed as participants were instructed to either; A) reappraise the emotional response. This might have taken the form of instructing the participant to view their negative emotion positively; B)

Reappraise the emotional stimulus; informing the participant that a negative event will have a positive outcome; C) Reappraise via perspective taking; asking the participant to take on a more objective viewpoint about an emotion-eliciting stimulus; and D) Reappraisal-mixed, where a combination of the above strategies would be used (Webb et al., 2012).

In their meta-analysis, Webb and colleagues (2012) showed that cognitive reappraisal strategies had the strongest effects on emotion regulation for participants. In the between-process effect for emotional outcomes, cognitive reappraisal had a medium to small effect (d = 0.36). Cognitive reappraisal had a medium effect on self-report of participant emotion (d = 0.45). Cognitive reappraisal also had a medium effect on behavioural measures of emotion (d = 0.55). There was no effect on physiological measures (d = 0.05). With within-process studies, the effect sizes were also all positive for cognitive reappraisal strategies, including emotional outcomes (d = 0.23), reappraisal of the emotional stimulus (d = 0.36), and reappraisal via perspective taking (d = 0.45). Reappraisal-mixed strategies were found to have a large effect on emotional outcomes (d = 0.89), although the authors did note that this is based on just six of the studies looked at (Webb et al., 2012).

2.4.4. Expressive Suppression

Webb and colleagues (2012), again, describe four response modulation, or suppression, strategies. These include having the participant; A) suppress the experience of emotion, or telling oneself that they are not allowed to experience the focal emotion; B) suppress the expression of emotion, which in this case means acting in a way in which the observer would not be able to tell which emotion they are experiencing; C) suppressing the experience of the emotion-eliciting event; and D) a mixture of these strategies. Therefore,

according to these four definitions of suppressive techniques, suppression can be taken to mean hiding the expression of emotion or mitigating the subjective experience of that emotion.

Webb and colleagues (2012) meta-analysis describes the effect of suppression strategies on emotion regulation. Based on 102 comparisons, the average between-process effect size of suppression on emotion outcomes was low (d = 0.16). The largest effect was on behavioural measures (d = 0.90), and there was a small negative effect on physiological measures of emotion (d = -0.19). However, there was no significant effect on self-reported emotions (d = 0.03). Within the process of suppression, suppression of expression had a small-to-medium effect on emotional outcomes (d = 0.32), while the other methods, experience suppression, thoughts of the event suppression, and mixed suppression did not reliably impact outcomes (d = -0.04, d = -0.12, and d = 0.11, respectively) (Webb et al., 2012).

A limitation worth noting is that throughout the studies examined in Webb and colleagues (2012) analysis, the outcome emotion varied from study to study. In other words, some studies sought to elicit the emotion anger, while others examined sadness or disgust. This can influence the effect sizes as the experience of these emotions differ from person to person and situation to situation. The duration, intensity and response can also drastically change. The different levels of anger versus sadness and whether any of it would be comparable need to be taken into consideration. The responses of participants can also vary in regard to their subjective response, as well as physiologically and behaviourally.

2.4.5 Other Theoretical Approaches to Emotion Regulation

Emotion regulation has been conceptualised in different ways by other researchers, such as that by Gratz and Roemer (2004). They describe emotion regulation as a set of response modulation strategies that not only lead to goal-directed behaviour, but also involve a conscious awareness and acceptance of these processes. Where there are any difficulties in these emotion regulation strategies, there will also be emotional dysregulation and inappropriate behaviour. These difficulties are then split into six factors. These include; nonacceptance, where one has strong negative secondary emotions to a primary emotional response; goals, which include difficulty in performing tasks due to emotions; impulse, where emotions cannot be controlled; awareness, where one can acknowledge their own emotions; strategies, which refer to the belief that one has little control over their negative emotions; and clarity, where one can identify which emotion in particular they are experiencing (Gratz & Roemer, 2004).

2.4.6 Age Differences in Emotion Regulation

Emotion regulation does not remain static throughout the lifespan. People develop, learn, and refine these strategies over time (Gross, 2015). In the beginning as infants, people are capable of simple and easily utilised emotion regulation strategies. Later as adults, more sophisticated strategies are used that require knowledge of language, the environment, and motivations. Emotion regulation also becomes more rewarding as interactions with others broaden, with higher possibility of benefit, such as work promotion and family building.

It can then be expected that there will be age differences in emotion regulation. In Schirda, Valentine, Aldao, and Prakash (2016), age-related differences were found in the emotion regulation capabilities of 48 older adults (M_{age} = 65.13, *SD* = 4.45) and 49 young adults (M_{age} = 23.61, *SD* = 3.30). Specifically, older adults showed greater acceptance of stressful situations, and lower rates of maladaptive strategies such as suppression. Meanwhile, there were no age-related differences in cognitive strategies, which included reappraisal (Schirda et al., 2016).

2.4.7 Relationship with Technology and Social Network Sites

As mentioned in previous sections of this literature review, technology has become ubiquitous in New Zealand and around the western world. With a large proportion of the population interacting with technology and using smartphones on a daily basis, researchers are becoming interested in how people use this technology to regulate their emotions (Elhai, Hall, & Erwin, 2018a; Elhai, Levine, Dvorak, & Hall, 2016; Yildiz, 2017).

As technology such as smartphones provide people with near-constant access to a highly capable distraction device, it is unclear whether this hinders the ability of people to appropriately regulate their emotions in response to distressing situations. Elhai and colleagues (2016) investigated the relationship between problematic smartphone use, wellbeing, emotion regulation, and other factors such as the 'fear of missing out', and the 'need for touch'. The authors used the Emotion Regulation Questionnaire (ERQ), developed by Gross and John (2003), to determine participants' tendencies to use emotional suppression or cognitive reappraisal and whether this was a significant covariate in smartphone-related psychopathology, measured using the Depression Anxiety Stress Scale (DASS; Lovibond &

Lovibond, 1995). Problematic smartphone use was determined by the Smartphone Addiction Scale (SAS), by Kwon and colleagues (2013). The authors found that expressive suppression significantly mediated the relationship between depression severity and problematic smartphone usage, and that smartphone use frequency and depression were mediated by cognitive reappraisal. Fear of missing out and the need for touch were also found to be predictors of problematic smartphone usage (Elhai et al., 2016).

To further determine the degree to which smartphone and SNS use is mediated by emotion regulation styles, Elhai and colleagues (2018a) asked participants to imagine losing access to their smartphones or SNS. Again, the authors used the ERQ and the DASS to gather baseline measures of emotion regulation style and depression, anxiety and stress. The American college student participants ($N = 396$, $N_{women} = 268$, $M_{age} = 19.01$, $SD = 1.26$) were then randomly placed into the smartphone loss group or the SNS loss group. They were then provided a statement asking them to imagine losing their device or SNS for 48 hours, and then were given a modified version of the DASS where the questions were presented in future tense (e.g. “I would find it” instead of “I found it”; “I would experience” instead of “I experienced”).

Their results show that emotion regulation styles were significant predictors of psychopathology in the imagined SNS loss group. Increased psychopathology from the DASS scores were predicted by increased scores of expressive suppression in the ERQ. Cognitive reappraisal also inversely predicted depression and stress, but not anxiety (Elhai et al., 2018a). These results were suggested by the authors to be consistent with the process model of emotion (Gross, 2014), and the ‘rich get richer’ model (Merton, 1968, as cited in

Elhai et al., 2018a) where people equipped with greater emotion regulation capabilities were better able to handle the stress of imagined SNS loss.

Gross and John (2003) characterize reappraisers as more socially outgoing, with a willingness to express positive emotion, and are thus more likely to be popular and have large numbers of friends. Conversely, emotional suppressors were more likely to avoid close relationships with others and avoid disclosing emotional experiences, both positive and negative. This would over time, erode social networks and support systems. This can be likened to the behaviour of passive and active SNS users, where reappraisers will create content and engage with others, whereas passive users will 'hide' behind an online persona (Gross & John, 2003).

While these studies are limited by participants' ability to accurately self-report on imagined scenarios and their problematic behaviours, they do provide an understanding of the role of emotion regulation styles on maladaptive behaviours.

2.4.8 Summary

This final section of Chapter 2 discussed emotion regulation. The process model of emotion was first described in detail. This theoretical approach describes emotion regulation as a series of responses to an emotion-eliciting situation. These responses can either be antecedent-focused and are utilised before the emotional response has fully developed, or they are response-focused and used after the emotion has been elicited. Two major strategies that often take focus in research are cognitive reappraisal and expressive suppression. They describe how the individual either changes the way they think about a situation or change the

way they react to a situation. Younger people are more likely to engage in expressive suppression, while older people will tend to use cognitive reappraisal. Suppression and reappraisal are also examined in the research of mental health and the use of technology. Studies show that people suffering from increased mental health difficulties and problematic technology use will tend to have difficulties in emotion regulation and use expressive suppression, while the opposite tends to happen for people who use cognitive reappraisal.

2.5 Chapter Summary

This chapter was comprised of a literature review of the current research in social media, emotion regulation and mental health. Social media describes a broad range of online, technological activities with a social component. When discussing social network sites, this refers to online communities where people interact with others based on their 'true-self'. They feature varied methods of communication and a space where one can create and manage an online profile. This literature review began by presenting how the use of various social network sites can lead to a host of positive and negative consequences. Positive consequences include increased social bonds, social capital and a sense of community. In contrast, extended use of social network sites can lead to addiction, cyberbullying and a range of mental health problems.

The next section of this literature review chapter covered mental health and well-being. After defining two of the key concepts used in this thesis, depression and anxiety, their incidence was investigated with New Zealand and worldwide perspectives. The concept of internet and social network addiction was discussed as an area that needs further consideration in research. The relationship between social network use and mental health was

further explored and several studies were collected and critiqued. These studies showed that depression, anxiety and addiction are linked with social network sites, although the nature of these relationships are not yet fully understood.

The third and last section of this chapter was a literature review of popular theories and research in emotion regulation. Emotion regulation was defined as the process of recognising and acting in response to emotion eliciting stimuli to change or adjust an experienced emotion. Two popular methods of emotion regulation were discussed, expressive suppression and cognitive reappraisal. Expressive suppression refers to how people change the way they respond to an emotion eliciting situation whereas cognitive reappraisal refers to how people change what they are thinking in an emotion eliciting situation. The section concluded with recent studies of the role emotion regulation plays in how people use social network sites and similar technology.

The research in this literature review shows how the three factors of social network site use, mental health and emotion regulation are inextricably linked. Emotion regulation governs to a high degree an individual's current mood. Mood has also been shown to be negatively impacted by social network site use, and vice versa.

The next chapter explains the methodology used in conducting the present research. It describes the techniques and tools applied to gather relevant data and answer the three research questions that were posed. The chapter also provides an in-depth examination of the participants of the study and how they were recruited, what the experiment design was, and the surveys used.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology utilized in examining the relationship between emotion regulation and wellbeing in relation to social network usage. It begins with the hypotheses posed for this research. Next, an overview of the quantitative and experimental research methods that were used and why they were deemed necessary will be provided. The chapter then contains a detailed description of the research participants and how they were recruited. Subsequently, the chapter describes how data was collected and analyzed. Finally, the ethical considerations of the research are described, as well as the strengths and limitations of the research.

3.2 Research Design

The aim of this research was to examine the links between emotion regulation style (whether participants favoured an expressive or suppressive style), mental health and wellbeing, and whether they were heavy or light users of social networking sites (SNS). Quantitative research enables trends and patterns to be observed in the data, and combined with the experimental design of this research, a cause and effect relationship was able to be determined (Field, 2009). Thus, the quantitative research design was used to see how the length of time on SNS would be related to mental health and emotion regulation style.

The participants were asked to complete a pre-test at the beginning of the research, and a post-test at the conclusion. The pre-test provided a baseline overview of their levels of well-being, their preferred emotion regulation style, some demographic information and general attitudes toward social media technologies. Well-being was measured with the Depression Anxiety and Stress Scale – 21 Items (DASS-21; Lovibond & Lovibond, 1995) and emotion regulation measured by the Emotion Regulation Questionnaire (ERQ; John & Gross, 2004).

The dependent variable, time on social network sites per day, was able to be measured and manipulated using the smartphone application, *Moment. Moment* allows its users to log a record of how much time they spent on apps. This log is highly accurate and able to be exported in a raw data file that can be used for analysis. In this research, participants were asked to submit their data from *Moment,* in the form of an email, to the lead researcher at the conclusion of the post-test.

This dependent variable would be manipulated by assigning participants to a control group and an experimental group. The participants in the control group were asked to continue using SNS as they normally would for the two weeks between the pre-test and post-test. The participants in the experimental condition were asked to use SNS as normal for one week, then to reduce their SNS use to 30 minutes per day or less for the second week.

The post-test repeated the measures of wellbeing and participants attitudes toward social media, and if these had changed in any way since the pre-test.

The data collected from participants was matched between pre and post-test using participants chosen unique identifiers and analyzed by the author. This allowed the data to be linked without compromising participants anonymity.

3.3 Research Objectives

This research is an attempt to determine how people use social media (social network sites) to regulate their emotions and well-being. Based on prior research, as described in the literature review, there are three hypotheses in this study.

3.3.1 Hypothesis One

H_1: Depression, anxiety and stress will decrease as participants spend less time on SNS. Participants in the experimental group will, therefore, display lower scores on the DASS subscales.

H_0: There will be no relationship between scores of depression, anxiety and stress, and time spent on SNS, and no difference between the control and experimental groups.

3.3.2 Hypothesis Two

H_1: Those who tend to have a suppressive emotion regulation style will spend more time using SNS and those with a reappraisal emotion regulation style will spend less time on SNS.

H_0: There will be no relationship between emotion regulation style and time spent on SNS.

3.3.3 Hypothesis Three

H_1: Those who tend to have a suppressive emotion regulation style will score higher in depression, anxiety and stress and those with a reappraisal emotion regulation style will have lower scores on depression, anxiety and stress.

H_0: There will be no relationship between emotion regulation style and scores of depression, anxiety and stress.

3.4 Recruitment

Participants were recruited through flyers placed throughout the University of Waikato campuses (See Appendix G.). The flyers featured a link to the survey, information about the research project, contact information for the lead researcher, as well as contact information for the research supervisor and the ethics committee that approved the project. The flyer featured information about compensation, which will be discussed in the following section.

Participants were recruited from four sources. The first source of participants were students taking part in psychology papers at the University of Waikato. These students were encouraged to take part in research projects in order to receive course marks. The flyers stated that students in particular psychology papers would be eligible for course marks for

taking part. Students in these papers were able to view the flyer throughout the campus and online through the University's learning platform, *Moodle.*

The second source of participants was the general population of the University of Waikato at the Hamilton and Tauranga campuses, such as staff and general visitors to the campuses. These participants, who were not eligible for course marks, were instead compensated by being placed into a draw for a $100 gift voucher, to be drawn at the conclusion of the study. Additional recruitment occurred through word-of-mouth and sharing on SNS websites: Facebook and Instagram.

3.5 Participants

This study collected data from n = 114 participants. The majority of these respondents stated that they were female (n = 88) with the rest being male (n = 25) and one participant stating they were gender diverse. The participants' ages tended to be between 16-25 with n = 84 respondents, followed by n = 20 participants aged between 26-35, then n = 6 participants aged between 36-45 and n = 4 between 46-55. Most participants were full-time students (n = 90), with n = 11 and n = 13 being part-time and not studying, respectively. Finally, approximately half of the participants were involved in part-time or casual work (n = 57), with n = 42 participants being unemployed and n = 15 working full-time. Working status and student status are not mutually exclusive categories. Ethnicity data was not collected as part of this study.

As a requirement for taking part, all participants had internet-capable smartphone devices and were regular users of social networking websites. To prevent any conflicts of

interest, participants who were students in the researcher's classes were prohibited from taking part. To encourage a representative sample of participants and prevent any health crises that may arise, it was suggested that anyone experiencing high levels of stress, anxiety, and depression refrain from taking part.

As per the University of Waikato's ethical guidelines, students interested in participating in this research were offered an alternative task to gain course marks. This involved some short questions about the nature of the research. The number of students who chose this option came to 27.

3.6 Data Collection

Data from this research was collected in two ways. First, the data concerning rates of wellbeing and emotion regulation styles were collected through anonymous surveys produced using Qualtrics software. The participants were all directed to these surveys where they initially completed a pre-test. This pre-test included the Emotion Regulation Questionnaire (ERQ; John & Gross, 2004), the Depression Anxiety and Stress Scale (DASS; Lovibond & Lovibond, 1995), and a short questionnaire that included demographic information about the participant and some general attitudes towards social media technology. More information on these questionnaire tools is provided in the following measurements section.

After completing the pre-test, participants were randomly assigned by the survey software into either the experimental or control condition and given instructions about the next step of the data collection process. The participants completed a post-test approximately

14-days later which included the DASS and another questionnaire to again gauge their attitudes towards social media technology.

The second way in which data was collected was from the *Moment* app. This app, which can be downloaded from the iOS and Android app store for free, keeps a record of the time spent on the user's smartphone apps. The app includes other features that were not of interest in this study, such as setting goals for limiting smartphone use. The participants were told to not enable these features and only enable those that were relevant for this study (See Appendix H.). After the participants had downloaded and installed the app, *Moment* would then keep track of their SNS usage over the next 14 days. At the conclusion of this period, and with prompting and further instruction in the post-test, participants were able to export their *Moment* data in the form of a raw data file. This file provided a complete log of their smartphone usage from when *Moment* was installed, to when the data was exported. The information provided included the date, total time spent on screen, the number of times the phone was picked up, and the time spent on each app. Of note, the researcher only analysed data from Facebook, Instagram, Snapchat, Twitter, and Tinder. An example of the *Moment* data output can be seen in Figure 3.1.

As all the data collected from participants are anonymous, each participant was required to create their own unique identifier that would allow the researcher to link their data sets from pre-test, post-test, and *Moment* data. A suggestion by the researcher to the participants was to take the name of their first pet or first car, and their house number, e.g. Snowball31. This made it easier for the participants to recall their identifier across the data collection components.

Once participants had completed the pre-test and post-test, they were to submit their data to the author. The *Moment* app uses an inbuilt feature to easily export data. The participant chooses the *'Export data'* function which then gives them the ability to input the author's email address and forward the complete data set.


```
    "date" : "2019-02-22T00:00:00+13:00"
  },
  {
    "sessions" : [

    ],
    "minuteCount" : 123,
    "pickupCount" : 46,
    "pickups" : [

    ],
    "appUsages" : [
      {
        "appName" : "Instagram",
        "onScreen" : 58
      },
      {
        "appName" : "Safari",
        "onScreen" : 40
      },
      {
        "appName" : "Messenger",
        "onScreen" : 32
      },
      {
        "appName" : "Home & Lock Screen",
        "onScreen" : 25
      },
```


Figure 3.1. A screenshot of the data that is provided from Moment

3.7 Justification of Research Design

This quantitative, experimental research design was chosen as it would allow a cause/effect relationship to be drawn between time spent on collective and specific SNS, emotion regulation style, and levels of depression, stress, and anxiety. The participants were

all randomly and equally assigned to the control or experimental condition. Having these two conditions would demonstrate that manipulating the dependent variable would have an effect on the participants (Field, 2009).

The DASS-21 was chosen for its high reliability and validity in various cultural populations (Oei, Sawang, Goh, & Mukhtar, 2013). The DASS-21 has been shown to have good internal consistency and inter-scale correlations (Lovibond & Lovibond, 1995). Coefficient alpha values range from .84 on the Anxiety subscale, to .91 on the Depression subscale (Lovibond & Lovibond, 1995). Furthermore, internet administration of the DASS-21 does not significantly differ from traditional pen-and-paper administrations (Zlomke, 2009).

Coefficient alpha values range from 0.75 to 0.82 for the reappraisal subscale, and from 0.68 to 0.76 for suppression (John & Gross, 2004). This information about participants is important as people who tend to use certain styles may gain different benefits and disadvantages from certain activities, which in this case would be SNS use (Gross, 2014).

Using app tracking technology, with the app *Moment*, allowed for greater precision than traditional log-keeping methods. The process is almost completely automatic, working in the background while its user continues to operate the SNS normally. The user simply installs the app, follows a short series of instructions, and then forwards the data to the author at the conclusion of their participation in the study.

3.8 Measurements

In this section, information on the tools used for data collection will be given. This refers to the tools to gather information about demographics, attitudes toward social media, well-being, and emotion regulation style.

3.8.1 Demographics

Both pre-test and post-test included demographic questions to assess and control for age (*16-25, 26-35, 36-45, 46-55, 56-65,* and *65+*), gender (*Male, Female, Gender diverse,* and *Prefer not to say*), employment status (*Full-time, Part-time/Casual,* and *Unemployed*) and student status (*Full-time, Part-time,* and *Not studying*). These demographic questions were included in both tests to aid in linking the tests to the correct participants, in case there were any issues with participants forgetting or changing their unique identifier.

3.8.2 Attitudes toward social media

In both surveys, participants were asked about their attitudes toward social media. The questions were "to what extent do you think social media is good or bad for you (Facebook, Instagram, Snapchat, etc)?" and "to what extent do you think social media is good or bad for society?" Response options were: 1 = *Very bad;* 2 = *Bad;* 3 = *Neutral;* 4 = *Good;* 5 = *Very good.* Participants were provided with an optional comment box where they could elaborate on their response.

The post-test included further questions about whether their attitudes toward social media had changed at the conclusion of the research and their experience of taking part. The question "are your screen time averages higher or lower than what you expected?" was accompanied with the response options: 1 = *Much lower;* 2 = *Slightly lower;* 3 = *About the same;* 4 = *Slightly higher*; 5 = *Much higher.* The next question, "are you likely to continue using social media at your previous level?" had the response options: 1 = *Yes;* 2 = *No;* and 3 = *Unsure.*

3.8.3 Well-being

Well-being was measured using the Depression Anxiety Stress Scale (DASS) in both the pre-test and post-test. The DASS-21 is a 21-point inventory with Likert-style questions that range from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much, or most of the time*). Examples of questions include "I found myself getting upset by quite trivial things" and "I tended to over-react to situations". The summation of a participant's scores gives an insight into their level of mental well-being, with a score for each of the depression, stress and anxiety subscales (Lovibond & Lovibond, 1995).

3.8.4 Emotion regulation

The Emotion Regulation Questionnaire (ERQ) is a 10-point inventory that also features Likert-style questions ranging from 1 (*Strongly agree*) to 7 (*Strongly disagree*). Examples of questions include "I control my emotions by changing the way I think about the situation I'm in" and "when I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm." The participant's scores on this inventory were averaged

and this indicated whether they prefer a reappraisal or suppressive emotion regulation style (John & Gross, 2004).

3.9 Summary

This chapter consisted of describing the methodological approach used to meet the aims of this study. This study's research design used a pre-test post-test experimental approach, where participants completed a pre-test survey, were randomly allocated into a control or experimental group, and then completed a post-test two weeks later. The participants were asked to either continue using social network sites as normal on their mobile smartphones for the two weeks between pre-test and post-test, or lower their social network use if they were in the experimental group.

The research questions guiding this research were put forth and were described according to the null hypothesis and alternative hypothesis. The first research question stated that participants in the experimental group will experience a decrease in depression, anxiety and stress as a result of decreasing their SNS use. The second question stated that there will be a positive correlation between problematic emotion regulation and high SNS use. The third and final research question stated that there will be a positive relationship between problematic emotion regulation and mental health problems.

The pre-test consisted of the DASS-21, ERQ and a small number of demographic questions, as well as some questions measuring attitudes towards social media. The post-test was of the same format, without the ERQ. This chapter described the *Moment* app, why it

was chosen to be used in this study and how data was collected and analysed. The chapter concluded by providing justification for the methods chosen to be used in this study.

The next chapter will present the results of this study. It will begin by describing the process of analysing and presenting the data collected and will then discuss missing data. This results chapter will then present and answer each research question by using the data as evidence.

CHAPTER 4

RESULTS

4.1 Introduction

This study was conducted to investigate the relationship between social network use, mental health, and emotion regulation. Three hypotheses were formulated to guide the research. The first hypothesis was that differences in depression, stress and anxiety would increase among those who use more social network sites. The second hypothesis was to determine if increased social network site usage had any relationship with problematic emotion regulation. The third hypothesis then compared the relationship between problematic emotion regulation and depression, stress and anxiety. This chapter presents the results of this research using appropriate statistical analyses in the order of each hypothesis. Following this the participants age, gender, work and student status is examined in order to present a profile of New Zealand mental health in universities. Finally, the chapter concludes with an analysis of the participants' attitudes toward social media, and whether they hold positive or negative opinions about it.

4.2 Analysis

Data analysis was conducted primarily through the use of *IBM SPSS Statistics* software and *Microsoft Excel*. As the surveys were conducted through *Qualtrics*, data was able to be exported in the appropriate file format to SPSS with correctly labelled and coded variables. *Moment* data was transformed into an Excel spreadsheet and then imported into SPSS.

To produce scores of SNS use, the first 14 days of app data was taken. The average time in minutes for each SNS was taken for the first 7 days (T1) and the last 7 days (T2). Scores were also taken for total phone use, in minutes. The social network platforms included for analysis were Facebook, Instagram, Snapchat, Twitter, and Tinder. Data from any other app was immediately deleted.

T-tests and one-way ANOVA's were first conducted to determine significant effects between the experimental and control conditions in scores of the DASS subscales, as well as differences in SNS use. ANOVA's were also conducted to establish whether there were significant differences between the pre-test scores of participants and post-test scores.

Next, a correlational coefficient matrix was performed to observe the relationships between the use of each SNS platform, as well as the DASS subscales and emotion regulation styles. Finally, a series of multiple linear regression analyses were conducted to test the relationship between emotion regulation styles and the DASS subscales.

4.3 Missing Data

This research had a considerable rate of attrition. Of the 114 participants who began the pre-test, 108 completed it. Of the remaining participants who completed the pre-test, 38 also completed the post-test 14 days later.

Regarding the Moment data, 21 participants completed sending their data in to the researcher. Six other participants contacted the researcher stating they were encountering technical difficulties exporting the data; this issue was unable to be resolved.

The social network platforms Tinder and Twitter were the least common forms of SNS observed, with only two and one participants having spent any time using them, respectively. They were thus excluded from analysis and the focus was set on Facebook, Instagram, and Snapchat.

4.4 Profile of Participants

As described in the previous chapter, each participant entered demographic data describing their age, gender, work status, and student status. This collection of data provides an insight into those students, staff and others who spend time at New Zealand universities. From here, we are able to determine average scores of depression, anxiety, and stress, as well as average suppression and reappraisal scores. This information is presented in Table 4.1.

At the pre-test, the majority of participants in this sample were: female (77.19%); aged between 16 and 25 (73.68%); a full-time student (78.94%); and were either working part-time/casually (50%) or unemployed (36.84%). At the post-test, these ratios persisted with the sample being: 73.68% again for participants aged between 16 and 25; 81.57% female; 78.94% studying full-time; and 44.73% and 47.36% part-time/casual or unemployed, respectively.

It is noteworthy that many of the participants in this sample reached DASS scores that would meet the criteria for 'mild' depression, stress or anxiety. Scores between 10-13 for depression, 8-9 for anxiety and 15-18 for stress are considered mild, while any scores below are considered to be normal. Many of the demographic groups reached these scores, as seen in Table 4.1.

To compare scores between gender an independent samples t-test was conducted. The results show that female participants experienced significantly higher rates of anxiety (t = -2.28, p < .05) and stress (t = -3.11, p < .005) and lower scores of expressive suppression (t = 2.16, p < .05) than male participants.

Table 4.1

Summary of participant data across demographics with scores of the DASS and ERQ at the pre-test

	Pre-test or Post-test		DASS *M (SD)*			ERQ *M (SD)*	
	Pre-test	Post-test	Depression	Anxiety	Stress	Expressive	Cognitive
Age							
16-25	84	28	11.12 (10.20)	9.42 (8.01)	15.90 (8.89)	4.00 (1.2)	4.63 (1.12)
26-35	20	8	8.00 (7.66)	6.22 (5.73)	11.88 (7.14)	3.29 (1.34)	4.71 (0.99)
36-45	6	2	5.00 (5.89)	4.00 (5.51)	7.66 (6.37)	3.87 (1.39)	4.77 (1.32)
46-55	4	0	6.50 (6.60)	10.5 (6.61)	11.50 (4.12)	3.75 (0.41)	5.70 (1.16)
Gender							
Male	25	7	9.58 (8.78)	5.58 (5.46)	9.91 (7.3)	4.30 (1.22)	4.63 (0.99)
Female	88	31	10.04 (9.79)	9.10 (7.12)	15.78 (8.45)	3.70 (1.17)	4.72 (1.16)
Work Status							
Full-time	15	3	7.20 (8.71)	8.53 (8.53)	11.06 (7.66)	3.08 (1.36)	5.17 (1.28)
Part-time/Casual	57	17	10.23 (10.17)	7.69 (6.81)	15.03 (7.62)	4.02 (1.28)	4.50 (1.11)
Unemployed	42	18	10.97 (9.22)	9.85 (8.22)	15.36 (9.95)	3.96 (1.03)	4.78 (1.03)
Student Status							
Full-time	90	30	10.04 (9.38)	8.45 (7.50)	14.88 (8.78)	3.98 (1.12)	4.63 (1.13)
Part-time	11	4	10.72 (10.24)	10.00 (6.69)	15.09 (7.44)	3.75 (1.57)	4.92 (0.72)
Not studying	13	4	9.84 (11.29)	8.61 (9.39)	12.46 (8.75)	3.23 (1.53)	4.92 (1.29)
Total	114	38					

In comparing the three DASS subscales and emotion regulation scores between the different ages of the participants, a series of one-way ANOVA's were conducted with Bonferroni post-hoc tests. It was found that there were no significant differences in scores of

depression, anxiety and stress between the different age groups of the participants. There were no significant differences in emotion regulation between the different age groups.

Next the means of the DASS and ERQ were examined among participants of different student status and different work status. There were no significant differences between the means of the DASS and ERQ subscales between those of different student status. However, those employed in full-time work had significantly lower expressive suppression ratings than those in part-time/casual work ($p < .05$), or unemployed ($p < .05$).

A linear regression analysis was conducted to test whether age, gender, student status, or work status predicted the three subscales of the DASS at the pre-test. Age ($\beta = -2.060$, $p < .05$) and gender ($\beta = 4.319$, $p < .05$) were the only significant predictors of stress accounting for 7.2% of the variance in scores, while depression and anxiety were not significantly predicted by any variable. A linear regression analysis was next conducted to determine whether these four variables were predictors of ERQ scores. The analysis showed that age, gender, student status, and work status were not significant predictors of expressive suppression or cognitive reappraisal.

The descriptive statistics for each subscale of the DASS at pre-test, and post-test for the experimental and control conditions are displayed in Table 4.2. In testing for the normality of distribution using the Shapiro-Wilk method, the variables depression ($p < .000$), stress ($p < .000$) and anxiety ($p < .000$) were all non-normally distributed. Using the same method in testing for normal distribution for time spent on SNS sites, it was found that Facebook ($p = .342$) and Snapchat ($p = .670$) were normally distributed, but Instagram was not ($p = .033$).

A Pearson correlation matrix was produced to examine the relationships of all variables, including the DASS subscales, emotion regulation strategies, and SNS sites. These relationships are presented in Table 4.2. The relationships between the DASS subscales all reached significance, with strong, positive relationships with each other. Suppression also had significant positive relationships with the DASS subscales depression (r = .456) and anxiety (r = .300), but not stress. Finally, average SNS use was highly correlated with average Facebook use (r = .825) and Snapchat use (r = .797), but not Instagram.

Table 4.2

Pearson correlation matrix between DASS subscale variables, emotion regulation strategies, and average time spent on SNS

	Depression	Anxiety	Stress	Reappraisal	Suppression	Facebook	Instagram	Snapchat
Anxiety	.624**							
Stress	.642**	.694**						
Reappraisal	-.168	-.083	-.092					
Suppression	.456**	.300**	.119	-.04				
Facebook	-.219	-.485	-.192	.124	-.125			
Instagram	-.500	-.336	-.309	.298	-.278	.179		
Snapchat	.079	-.353	-.032	.265	-.09	.485	.159	
SNS use	-.142	-.531	-.226	.209	-.303	.825**	.423	.797**

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

4.5 Hypothesis One

To test for changes in scores of the DASS subscales in paired data sets, a one-way ANOVA was conducted using matched pairs for both the experimental condition and the control condition. The means and results of the ANOVA are shown in Table 4.3. These

results show that participants in the control group had no change in their scores on the DASS subscales, while participants in the experimental group showed a significant decrease in anxiety and stress scores, but not depression.

Table 4.3

Descriptive statistics for DASS Subscales, and differences between pre-test and post-test administrations

Group and variables	DASS administration *M (SD)*	Test of difference between pre-test and condition
Pre-test		
Depression	10.05 (9.12)	
Anxiety	8.22 (6.96)	
Stress	13.83 (8.90)	
Post-test (Control)		
Depression	7.33 (6.03)	$t(124) = 1.310, p = .193$
Anxiety	6.00 (4.87)	$t(124) = 1.397, p = .165$
Stress	11.90 (7.19)	$t(124) = .935, p = .352$
Post-test (Experimental)		
Depression	6.17 (7.65)	$t(121) = 1.690, p = .094$
Anxiety	3.58 (4.54)	$t(121) = 2.664, p = .009$
Stress	7.05 (6.12)	$t(121) = 3.052, p = .003$

Next, one-way ANOVA's were conducted to test for differences between Facebook, Instagram, and Snapchat use during the first and second weeks for participants in the experimental and control conditions. These results are shown in Table 4.4. As expected, there were no statistically significant differences between week 1 and week 2 for the control group. However, there was also no statistically significant differences in time spent on SNS in the experimental group either. Facebook users in the experimental group halved their time using the app, and the difference in their DASS scores approached significance. Notably, Snapchat

users actually increased their use by almost a third and their scores were what would be expected if they had decreased their use. These results showed that participants in the experimental condition were not reducing their time on SNS enough to differentiate themselves from the control condition.

Table 4.4

Descriptive statistics for SNS use, and differences between Week 1 and Week 2

Group and variables	Minutes spent on app (Week 1) *M (SD)*	Minutes spent on app (Week 2) *M (SD)*	Test of difference between Week 1 and Week 2
Control			
Facebook	26.23 (21.58)	26.44 (31.73)	$F(1,15) = .000, p = .988$
Instagram	33.52 (14.18)	24.49 (11.13)	$F(1,15) = 2.007, p = .178$
Snapchat	39.04 (32.26)	41.29 (46.70)	$F(1,15) = .012, p = .913$
Experimental			
Facebook	31.92(16.31)	15.00 (14.81)	$F(1,12) = 4.128, p = .065$
Instagram	52.00 (15.05)	41.24 (22.71)	$F(1,10) = .935, p = .356$
Snapchat	18.56 (13.63)	23.39 (45.10)	$F(1,12) = .073$, p = .791

These results show some support for Hypothesis 1, in that those participants in the experimental condition experienced some improvement in mood. However, their SNS scores did not significantly differ between pre-test and post-test. This may suggest the presence of a confounding variable.

4.6 Hypothesis Two

A series of linear regression analyses was conducted next in order to determine whether emotion regulation style predicts SNS use. The SNS: Facebook; Instagram; Snapchat; and total time spent on SNS were all tested individually. The results are shown in Table 4.5. The results showed that SNS use was not significantly predicted by emotion

regulation styles expressive suppression or cognitive reappraisal. The null hypothesis can therefore be accepted, suggesting that emotion regulation style shares no relationship with time spent on SNS.

Table 4.5

Results of the linear regression analysis to predict time spent on SNS by emotion regulation style

Time spent on SNS as dependent variable	Model Summary		Unstandardized Coefficients		*p*
	r	r^2	β	Std. Error	
Facebook	.131	.017			.902
Reappraisal			2.031	4.482	.659
Suppression			.256	5.859	.966
Instagram	.461	.212			.269
Reappraisal			2.361	3.447	.508
Suppression			-6.917	4.362	.141
Snapchat	.220	.048			.743
Reappraisal			5.804	7.435	.450
Suppression			-.134	9.719	.989
Total SNS	.289	.084			.592
Reappraisal			2.138	3.641	.568
Suppression			-4.233	4.759	.391

4.7 Hypothesis Three

A linear regression analysis was then conducted to test the degree to which reappraisal, suppression, age and gender predicted the three DASS subscales. The results are presented in Table 4.6. This analysis produced statistically significant results for depression ($p < .000$), anxiety ($p < .000$), and stress ($p < .000$). The linear regression showed that for depression, 25.8% of the variance in scores is explained by suppression ($\beta = 3.054$, $p < .000$). The other predictor variables did not reach significance. In predicting anxiety, suppression

again, was a significant predictor (β = 2.063, $p < .000$), along with the gender of participants (β = 6.133, $p < .000$). These variables accounted for 22.1% of variance in stress scores. Finally, while suppression was not a significant predictor of stress, age (β = -2.576, $p < .05$) and gender (β = 6.871, $p < .000$) were, and they accounted for 18.7% of variation.

Table 4.6

Results of the linear regression analysis to predict depression, stress, and anxiety

DASS Subscale as dependent variable	Model Summary		Unstandardized Coefficients		*p*
	r	r^2	β	Std. Error	
Depression	.508	.258			<.000
Reappraisal			-.1.169	.739	.117
Suppression			3.0545	.673	<.000
Age			-1.418	1.094	.198
Gender			2.855	1.900	.136
Anxiety	.470	.221			<.000
Reappraisal			-.438	.599	.466
Suppression			2.063	.546	<.000
Age			-.847	.887	.342
Gender			6.133	1.541	<.000
Stress	.432	.187			<.000
Reappraisal			-.462	.694	.507
Suppression			.949	.632	.137
Age			-2.576	1.028	.014
Gender			6.871	1.785	<.000

Reappraisal was not a significant predictor for all three variables. This suggests partial support for the alternative hypothesis that emotion regulation styles predict emotional wellbeing, as measured by the DASS. Specifically, higher scores of expressive suppression predicted with significance, depression and anxiety, while reappraisal is not a significant predictor of depression, stress, and anxiety.

4.8 Attitudes toward SNS

4.8.1 Pre-test

When asked about their attitudes toward social media, both for personal reasons and across society, participants gave their answers according to a 5-point Likert scale. The answers ranged from: 1 – "*Very Bad*"; 2 – "*Bad*"; 3 – "*Neutral*"; 4 – "*Good*"; and 5 – "*Very Good*". They were given the opportunity to answer this questionnaire in the pre-test and post-test. The participants were also given the optional opportunity to leave any comments if they wished to elaborate on their answers.

In the pre-test, all of the 114 participants who participated answered the question '*To what extent do you think social media is good or bad for you? (Facebook, Instagram, Snapchat, etc)'.* A further 23 participants left a comment describing their rationale. The mean score was 2.89 (*SD* = .75). This shows participants tended to lean toward believing social media had a negative to neutral effect on themselves. This was reflected in the percentages of scores where "*Very Bad*" and *"Bad"* were 2.6% and 27.2%, respectively. Neutral scores were 50.9%, 16.7% chose "G*ood"* and 2.6% chose *"Very Good"*. Among the participants who left a comment, six said it was *"Bad"*, twelve chose "*Neutral"*, and five said it was *"Good"*.

Participants who stated it was *"Bad",* provided comments such as "*Social media affects my mental health daily due to the content which I'm exposed to*", and discussed its negative impacts on productivity, and their tendency to compare themselves to others, as well as their experiences with cyberbullying, and concerns over their own privacy. The participants who believed it was *"Good"* provided comments such as "*Depends how it's used*

but I think connecting with family and friends in different areas of the world is highly beneficial", and other comments which similarly highlighted SNS importance in maintaining communication with others.

Next, in the pre-test, participants were asked 'To what extent do you think social media is good or bad for society'. Again, all 114 participants answered this question. The mean score was 2.67 (*SD* = .77). The percentages were 7% for *"Very Bad*", 35.1% for "*Bad*", 42.1% for *"Neutral*" and 15.8% for "*Good"*. Twenty-one of these participants left a comment in which 17.3% chose *"Very Bad",* 21.7% chose "*Bad*", 26% chose "*Neutral*" and another 26% chose "*Good*".

Participants who stated why they believed social media was *"Bad"* or *"Very Bad*" for society included discussion of *"fake news", "cyberbullying*", and *"idolizing celebrities*". One participant wrote

> *"I think people tend to become attached to their online image that they believe the best parts of their persona (as displayed in their social media profiles) that they cannot distinguish between their real identity and their social media identity. I also think being exposed to users' lives that are supposedly perfect can affect our wellbeing because we set unrealistic expectations for ourselves."*

Participants with positive opinions towards social media's role in society were cognizant of its potential for fast, universal communication. One participant wrote

> *"I think social media is a useful tool for activism - and particularly for collective action. And for the widespread (and fast) dissemination of information. Global intervention - such as that occurring*

regarding the Australian bush fires currently - is a direct result of social media."

Other participants talked about how it lets them communicate with friends and family worldwide, and reiterated points about how it can be used in activism, especially political and environmental.

4.8.2 Post-test

When asked again about their attitudes towards social media in regard to themselves and society overall, mean scores decreased to $M = 2.84$ ($SD = .75$) and $M = 2.66$ ($SD = .81$), respectively. However, when tested for a significant difference, the t-test came back as non-significant. More specifically, for their attitudes about personal use of social media, 2.6% chose *"Very Bad",* 28.9% chose *"Bad",* 50% chose *"Neutral",* and 18.4% chose *"Good".* Finally, for their attitudes about the social media being *"Good*" or *"Bad*" for society, 7.9% of responses were *"Very Bad",* 31.6% were *"Bad*", 47.4% were *"Neutral*" and 13.2% were *"Good".*

The participants were asked in the post-test whether the screen time averages they had provided were higher or lower than what they expected. Twenty-one percent of participants claimed their screen-time was *"about the same"* as what they expected, 47.4% found their screen-time was *"slightly higher"* than what they expected, and 31.6% found their screen-time was "*much higher"* than what they expected. No participants found that their screen-time was "*slightly lower"* or *"much lower"* than what they expected.

Next, the participants were asked to rate if they were likely to continue using social media at the level they previously had before the study. The percentage of participants who chose *"Yes"* was at 55.3%, while participants who chose *"No"* or *"Unsure"'* were at 23.7% and 21.1%, respectively.

4.9 Summary

Overall, these results suggest that the relationship social network use has with mental health and emotion regulation is multifaceted. While the statistical analyses showed that the mental health measures of stress and anxiety decreased among participants in the experimental group, the results show that this was not an effect of directly decreasing SNS use. Rather, mental health was improved due other confounding variables that are not related to decreasing time spent on SNS. This result was able to partially confirm the first hypothesis.

The second hypothesis sought to determine links between emotion regulation and social network use. The results showed that there was no relationship, rejecting the hypothesis. Expressive suppression did not predict increased SNS use, nor did cognitive reappraisal predict less SNS use.

The third hypothesis stated that emotion regulation plays a role in mediating mental health. Expressive suppression was able to predict with significance, depression and anxiety, but not stress. Cognitive reappraisal did not predict mental health. This partially confirmed the third hypothesis.

A profile of the participants was created too, showing rates of mental health problems and emotion regulation capabilities among a sample of New Zealand university students. It was found that females were more likely to be experiencing stress, but there was no difference between males and females regarding depression and anxiety. Males were more likely to use expressive suppression to attempt to regulate their emotions.

Finally, attitudes toward social media for personal and social use were evaluated. Participants tended to believe that social media use was *"Bad"* or *"Neutral*" both for themselves and society. When asked why, some participants reported SNS use was negative because it affected their mental health, is a platform for cyberbullying, and is abundant with fake news. Participants who believed social media is good discussed its uses in communication and maintaining contact with friends.

The next chapter will include a more detailed analysis and discussion of the findings presented here. It will include an in-depth interpretation and is critiqued against previous literature. The discussion will include potential implications of the findings, and finish by evaluating the strengths and limitations of the study, ethical considerations, and recommendations for future research.

CHAPTER 5

DISCUSSION

5.1 Introduction

This thesis presents an empirical examination of how users interact with social networking sites and regulate their emotions and wellbeing. By asking participants to keep a highly accurate daily log of their social network usage on their mobile smartphones, between a pre-and post-test of the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995) and Emotion Regulation Questionnaire (ERQ; John & Gross, 2004), this research is able to draw correlations and predictions that offer insight into how popular social network sites impact mental health.

In this chapter, the findings of the study are discussed and the relationship to the research objectives presented. These results are then interpreted according to previous research on the subject. Implications of these findings are subsequently discussed with the potential for improvements in the way social network users interact with social network site's (SNS) and the further interaction between mental health and emotion regulation identified. Finally, this section explores the strengths and weaknesses of the research design, ethical considerations and recommendations for further research in this area.

5.2 Hypothesis One

The first hypothesis stated that there will be a positive relationship between SNS use and mental health problems. As the participants in the experimental condition were asked to

reduce their SNS usage between the pre-test and post-test, they were hypothesized to score lower on the three DASS subscales, depression, stress and anxiety, at the post-test. Participants in the control condition were expected to have no differences between pre-test and post-test.

The results showed a significant decrease in the mean scores for stress ($M_{difference}$ = -6.78, t = 3.052, p < .005) and anxiety ($M_{difference}$ = -4.64, t = 2.664, p < .01) among participants in the experimental condition, and although scores of depression dropped, this did not reach significance ($M_{difference}$ = -3.88, t = 1.690, p = .094). This can be compared to the control condition, where scores did not significantly differ between the pre and post-test. This decrease in anxiety and stress partially confirms the first hypothesis of the research.

While the scores for anxiety and stress had statistically significant changes, SNS usage was insignificantly reduced in the experimental condition. In other words, participants in the experimental condition were not found to have reduced their SNS use to the requested amount and this could have impacted the results. This may reflect the reduced sample size of participants who completed the research requirements and submitted their data. It may be indicative of a level of addiction to social networking that was not taken into account. Participants in the experimental condition perhaps struggled to actually reduce their SNS usage meaningfully, to the point where 30 minutes a day on social networking sites was perceived by some participants to be an unrealistically low amount or were unable to keep it limited. Therefore, participants in this current study who were unable to reduce their SNS use could have genuinely struggled to reach that 30-minute target, but still had reduced their usage of SNS enough to make significant reductions in their stress and anxiety levels.

This result could be indicative of a possible prevalence of SNS addiction. Smartphone and internet addiction are well-studied in different populations. This can be seen in early research by Liebert and Chou (2001) where 30.1% of their internet-using student sample reported withdrawal symptoms such as anxiety, moodiness, and a desire to log back on. Within this sample, 90% did not believe that excessive internet use was a legitimate problem, and just 10% had ever tried to curb their usage or seek help for their addiction. In a survey with Australian and New Zealand psychiatrists by Dullur and Hay (2017), 93.7% of the sample were familiar with the internet addiction as proposed by Young (1998). However, only 24.28% of surveyed psychiatrists agreed that a problematic internet use was prevalent enough that a definition should be included in the next DSM or ICD, and another 44.44% chose '*Maybe*'. Prevalence rates of smartphone addiction vary between non-western countries too. In Egypt, 6.1% of adolescents are addicted to smartphones, as well as 11.6% in Saudi Arabia and 8.7% in Korea (Desouky, 2016, and Park & Lee, 2014, as cited in Yildiz, 2017).

In a systematic review of studies on Facebook addiction, Ryan, Chester, Reece, and Xenos (2014), show that Facebook addiction, while inconsistently defined (in part because the Diagnostic and Statistical Manual of Mental Disorders 5th Edition has no definition for general SNS addiction yet (APA, 2013)), does exist, and those who may be addicted share many of the same symptoms as those of other addictions, such as to online gaming or general internet use. They found that the people most likely to be addicted to Facebook have poor psychological and social wellbeing. Facebook use creates a 'negative feedback loop' where users believe using Facebook will make them feel better, but it actually has the opposite effect (Sagioglou & Greitemeyer, 2014). Following the nature of addictive behaviours, the use of Facebook among some users continues regardless of the negative health outcomes.

As discussed in Chapter 2, recent studies, such as by Barnes, Pressey, and Scornavacca (2019) compared smartphone and SNS addiction, and how they related to the concept of cognitive absorption. Cognitive absorption refers to the state of mind one has when completely immersed and engaged in an activity. In this current study, and in the study by Barnes and colleagues (2019), cognitive absorption refers specifically to an activity involving technology. One of the questions Barnes and colleagues (2019) looked at was: Did participants reach a state of cognitive absorption while interacting with their SNS? This may help explain why so many of the participants in the experimental condition in this current research did not regulate their time spent on SNS during the second week of the experiment. They may have entered a state of cognitive absorption whilst using their SNS, and lost track of time.

Alternatively, rather than addiction, the participants in this present study may have deemed that 30 minutes a day was too restrictive and that a longer time was needed to complete their daily SNS routine. In the United States, adults spend about 46 minutes on social media sites per day (Nielsen, 2018). Social networking is undeniably important for socialising for many people (Liebert & Chou, 2001), so a reluctance to reduce usage may then reflect the participants' desire to maintain a consistent and appropriate level of communication with friends. To reduce daily usage to 30 minutes could be simply not enough time to engage and communicate with a close circle of friends across an array of social network platforms. Participants may have intentionally opted to maintain their online presence rather than reduce usage that complied with the study instructions.

The decrease in stress and anxiety demonstrates evidence that SNS use has an association with mental health, at least indirectly (Elhai et al., 2018a; Rasmussen, Punyanunt-Carter, LaFreniere, Norman, & Kimball, 2020; Vahedi & Zannella, 2019, Verduyn et al., 2015). While the decrease in SNS use was not significant for the experimental group, this suggests it is the quality of social network use that is problematic, but rather the quantity of its use. As participants who entered the study were made aware of before commencing participation, this research explored the association between SNS use and mental health. This association is becoming increasingly publicised in the media (Hampton & Wellman, 2018). As such, the general public is more aware of the perceived negative association with the prolonged use of SNS. While agreeing to participate, the participants may have primed themselves to the potential outcomes of this research, and that taking part required a conscious effort to regulate and control how they used their favourite social network platforms. This conscious regulation of their SNS usage would have contrasted with their unregulated SNS behaviours prior to the study. Thus, the corresponding decrease in anxiety and stress scores could be explained by a priming effect.

The finding that stress and anxiety are decreased following an imagined reduction in SNS use has been demonstrated in research by Elhai and colleagues (2018a). Their participants in the imagined social media loss group experienced a DASS anxiety decrease from $M = 4.36$ at the pre-test, to $M = 2.55$ at the post-test ($F(1,179) = 46.05$, $p < 0.001$), and a DASS stress decrease from $M = 6.84$ to $M = 4.32$ ($F(1,179) = 52.12$, $p < 0.001$). A decrease was found for depression scores, from $M = 4.53$ to $M = 2.62$ ($F(1,179) = 30.53$, $p < 0.001$), which contrasts with the findings of this current study. However, as this research by Elhai and colleagues (2018a) uses imagined hypothetical scenarios to elicit these reactions from participants, and there was no control group, direct comparisons to the present study are

difficult. The result that depression was not decreased in the experimental group was surprising. In Elhai and colleagues' study (2018a), a decrease in scores for depression was found. It could be possible that imagined SNS reduction would lead their participants to think they would be less depressed than what they actually would be, compared to the present study in which participants found depression did not change significantly due to any change or reduction in SNS use.

Rasmussen and colleagues (2020) found in their research on the association between social media, mental health problems, and emotion regulation, that frequency of social media use did not have a significant relationship with mental health. This further supports the finding in this current research of no direct relationship between depression, anxiety, and stress, and time spent on SNS, reinforcing the idea that it is not the amount of time spent on SNS that is important for mental health, but how the time is used.

Furthermore, in Vahedi and Zannella's (2019) meta-analysis of 55 studies exploring SNS use and depressive symptoms similarly showed that it is the quality of use, rather than quantity that impacts mental health. Specifically, they found that self-reported depression had the strongest association with problematic SNS use, rather than general SNS use. Problematic SNS use in Vahedi and Zannella's (2019) analysis refers to addictive tendencies, as well as experiences of negative social comparisons and cyberbullying. They gathered an effect size or $r = .165$ ($p < .001$) which shows a weak positive association between these variables. The studies included in their analysis generally focused on Facebook, which may affect generalisability to other social network platforms.

By reducing or changing how one uses SNS, users gain the ability to control the negative aspects of online communities. Hogan and Strasburger (2018) describe the prevalence of cyberbullying on sites like Facebook, and Lin and Utz (2015) and Utz, Muscanell and Khalid (2015) show that Facebook and Snapchat can be sources of jealousy, envy and the 'fear of missing out' or 'FOMO'. Instagram has been criticised for its high correlation between users who engage in social comparison and depressive symptoms (Lup, Trub, & Rosenthal, 2015). Facebook has been shown to be a primary source of information for current events and political news, including "fake news", especially among people who are likely to be the most distressed (Allcott et al., 2019). Cyberbullying, FOMO, social comparison and fake news have each been shown to have significant correlations with poor mental health. By simply altering how one is exposed to this content, or by mindfully changing their perception toward it, the negative impact of these sources on mental health can be reduced or mitigated.

Whether the participants in this current study were undergoing any experiences of cyberbullying or online relationship problems that would cause greater stress was unaccounted for. The prevalence of college students who had been cyberbullied in a U.S.A. sample was 19% in a study by Gahagen, Vaterlaus and Frost (2016). If this number is comparable to a New Zealand context, cyberbullying may have played a large role in the lives of the current sample of participants. As such, changing the way participants in the experimental group use SNS could have an impact on their experiences of online harassment. In Fenaughty and Harré's study (2013), the most common resolutions for cyberbullying involve abstinence from the internet and seeking social support from peers. The significant reductions in stress and anxiety in this present study might have been, at least partially, the effect of the successful resolution of harmful online experiences (Langos, 2012).

Improvements in mental health may have occurred because of the awareness, and therefore, reduction of engaging in negative social comparison among participants in the experimental condition. Negative social comparison refers to the users who receive negative effects from comparing themselves and their online persona to others, especially when comparing perceived attractiveness and popularity (Lup et al., 2015). This essentially relates to feelings of envy, in which the user resents another for possessing what they desire, whether it is attractiveness, popularity, wealth, or a lavish lifestyle (Lin & Utz, 2015). Feelings of envy and the related concept of jealousy have been displayed in users of Facebook (Lin & Utz, 2015; Utz et al., 2015), Instagram (Lup et al., 2015), and Snapchat (Utz et al., 2015). The related concept of FOMO, or the fear of missing out, stems from the negative comparison of others online, where the user fears missing out on important social information, such as gossip, party invitations, et cetera, which then leads to loneliness (Elhai, Levine, Dvorak, & Hall, 2016; Lup et al., 2015).

Most often, these feelings of social comparison are happening when users passively interact with SNS, rather than actively (Lup et al., 2015; Verduyn et al., 2015). In other words, passive users will 'silently' browse other people's profiles (such as romantic partners, friends, celebrities, etc.) and 'scroll' through posts, while active users generate content and engage with others (Verduyn et al., 2015). Active users tend to have more social capital and receive greater positive benefits from SNS, while passive users receive the opposite (Stronge et al., 2015). Both these positive and negative benefits have been shown by Verduyn and colleagues (2015), where they conducted an experimental longitudinal study to examine the effect of passive versus active use on wellbeing. They found that participants in the passive condition (who 'passively' scrolled on Facebook for 10 minutes) had a significant drop in

affective wellbeing after the experiment, compared to those who actively used Facebook for 10 minutes. Life satisfaction, referring to subject ratings about the quality of their life, was not affected by passive or active use. A second experiment by Verduyn and colleagues (2015) showed these same effects persisted when participants were randomly texted a link to a questionnaire many times throughout the week to ask about Facebook use. They again found that passive Facebook use predicted poor emotional wellbeing over time. Importantly, they determined that envy was a significant mediator between passive Facebook use and declines in affective wellbeing.

Differences in mood among participants in the present research may have been due to the ways they used SNS; either passively or actively. Active SNS use may have increased when participants in the experimental condition changed the way they engaged online. By becoming more mindful about daily time constraints, experimental participants may have chosen a more active role online, by creating more content and engaging with friends, thus increasing social capital and positive well-being. In contrast, participants in the control condition continued their use as normal, which would have meant not changing how they behaved online, passively or actively.

Sagioglou and Greitemeyer (2014) also found that Facebook use predicted mood. Their study, comprised of three separate experiments, showed a causal relationship between Facebook and depressive symptoms. The factor determining this effect was found to be the feeling of not contributing anything meaningful to the site. Participants felt like they had wasted time on a meaningless activity with no productivity. This can be likened to the passive users described in Lup and colleagues (2015) and Verduyn and colleagues (2015).

Sagioglou and Greitemeyer (2014) continue by discovering that participants have an expectation that Facebook will make them feel better, but instead it makes them feel worse.

5.3 Hypothesis Two

The second hypothesis stated that there will be a relationship between SNS use and emotion regulation style. In particular, those who favoured a cognitive reappraisal regulation style would spend less time on social networks, while those with an expressive suppressive style would spend more time on SNS. This theory was consistent with findings where users of other media would use more or less based on their preferred emotion regulation strategy (Elhai et al., 2018b; Elhai et al., 2016; Hormes, Kearns, & Timko, 2014; Yen et al., 2018).

The results confirmed the null hypothesis that there was no relationship between these variables. This can be seen in the correlational coefficients in Table 4.2., where emotion regulation strategies had insignificant relationships with Facebook, Instagram and Snapchat use. Further regression analysis confirmed that emotion regulation style did not predict SNS use.

The results of this study are supported by the findings of Rasmussen and colleagues (2020). However, a different measure of emotion regulation was used in their scale, which was the Difficulties in Emotion Regulation Scale (DERS) developed by Gratz and Roemer (2004). Rasmussen and colleagues (2020) found that participants who had poor emotion regulation, did not use SNS significantly longer than others. While there was no significant direct relationship between emotion regulation and SNS use, there was a significant relationship when the participant had both poor emotion regulation and high perceived stress.

The results of Gratz and Roemer (2004) mimic the results from this present study where participants high in expressive suppression were more likely to have increased stress and anxiety, which decreased after the two-weeks of reduced SNS use.

5.4 Hypothesis Three

The third and final hypothesis of this study was that there would be a relationship between scores on the DASS subscales and emotion regulation styles. Rates of depression, stress and anxiety were expected to decrease among those participants who favoured a reappraisal regulation style and increase for those who tended to use suppression. These theories are well supported in the literature (Gross & John, 2003; John & Gross, 2004; Webb, Miles, & Sheeran, 2012).

The regression analysis found that depression ($\beta = 3.054$, $p < .000$), and anxiety ($\beta = 2.063$, $p < .000$) were significantly predicted by those participants who favoured an expressive suppression emotion regulation style. Stress was not significantly predicted by expressive suppression. Those participants who scored highly on cognitive reappraisal style had no relationship with these three DASS subscales. These relationships are reflected in the correlational matrix in Table 4.2, where suppression has moderate positive relationships with depression and anxiety, and reappraisal has no significant relationships with the three DASS subscales. These results are consistent with the literature in similar studies of emotion regulation and its relationship to SNS use and mental health, and show that expressive suppression is a less effective strategy than cognitive reappraisal in regulating emotion (Elhai et al., 2018a; Elhai et al., 2016; Marino, 2018; Rasmussen et al., 2020; Yen et al., 2018; Yildiz, 2017).

This study shows evidence of a series of direct and indirect relationships between emotion regulation, mood, and SNS use. Emotion regulation and mood share a direct relationship, as depression and anxiety are significantly predicted by expressive suppression. Mood and SNS use also have a direct relationship as SNS manipulation leads to changes in anxiety and stress scores. An indirect relationship is thus shared by emotion regulation and SNS use. As anxiety was decreased in the experimental group, this shows that emotion regulation style must have changed accordingly. Expressive suppression is a predictor of anxiety scores. A shift from expressive suppression to cognitive appraisal or another antecedent-focused emotion regulation style leads to a decrease in anxiety. These relationships are displayed in Figure 5.1.

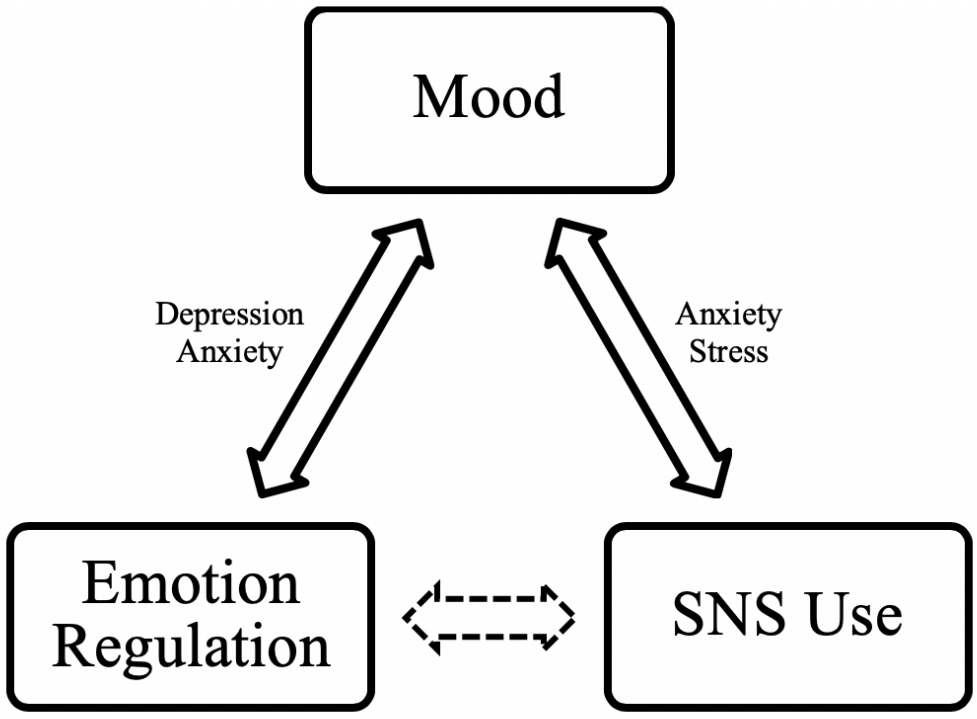

Figure 5.1. Diagram of the relationships between SNS, mental health, and emotion regulation

As social networking sites are a platform for users to express themselves, it is surprising that emotion regulation does not have a direct relationship with the quantity of SNS use. It is the quality of SNS use that is the most important mediating factor. Social network platforms are inherently a place for its users to express themselves and engage with others in ways similar to face-to-face contact (Settle, 2018). Social networks are a place where its users experience emotion based on the activity and content of others, as well as their own online behaviour, whether it be positive, such as joy, pride, or increased social bonds, or negative emotions such as social comparisons, FOMO, or envy (Settle, 2018). It makes sense that users who primarily experience the negative aspects of their SNS use, will score highly in measures of depression, anxiety, and stress, and therefore will use maladaptive emotion regulation strategies to accommodate these feelings (John & Gross, 2004).

If the users of the experimental group did not significantly reduce usage but instead mindfully used SNS in order to reduce their stress and anxiety over the 2-week period of the study, this has interesting implications on how users can avoid the negative impacts of SNS. By changing how they used SNS, these participants would have engaged in several antecedent-focused strategies of emotion regulation to achieve the aims of the study. According to the process model of emotion, antecedent-focused strategies are utilized before the emotional response is activated (Gross, 2015). These include situation selection, situation modification, attentional deployment, and cognitive change (Gross, 2015; John & Gross, 2004). Meanwhile, response modulation is a response-focused strategy of altering emotion experiences and occur after the emotion has been elicited (John & Gross, 2004). This process model of emotion regulation is displayed in Figure 5.2.

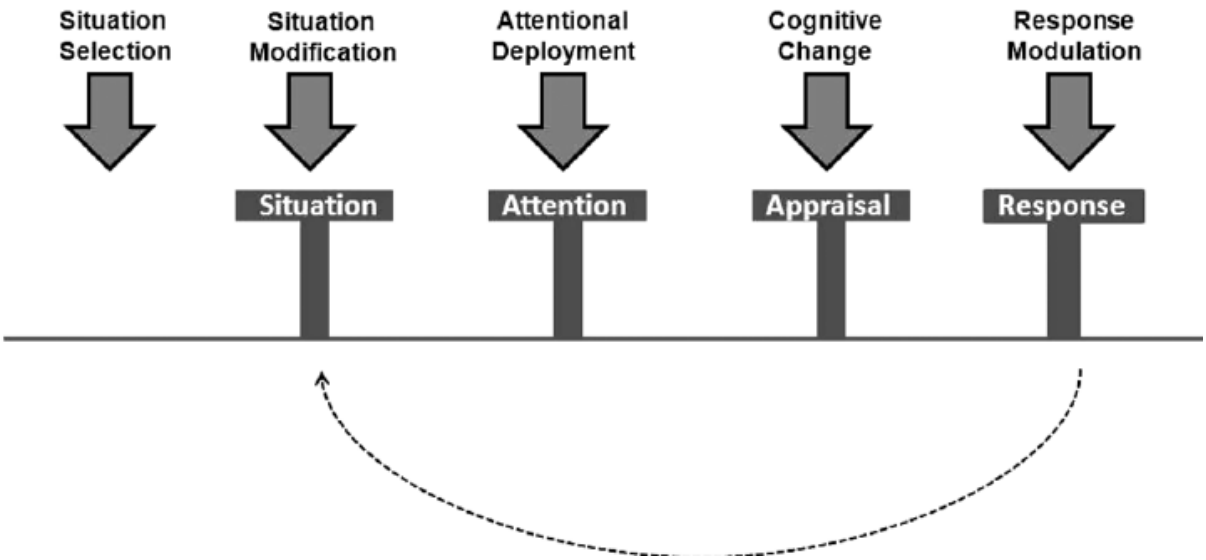

Figure 5.2. The process model of emotion regulation (Gross, 2014)

Among the experimental participants of this study, those with positive emotional gains may have decided before they were impacted by the negative aspects of SNS to reduce their usage before any negative consequences occurred, or change their online behaviour or environment. This is an example of situation selection and is the first stage of the process model of emotion. It involves changing, entering or removing oneself from the situation in which is eliciting the positive or negative emotion (Gross, 2015). As SNS sites resemble an online 'hang-out' space, this would have looked like the user choosing to spend time in areas that produced desirable emotions. Ordinarily, this technique is difficult to predict when it would be most beneficial. In real life, most people cannot predict how a situation will make them feel in advance. But if a regular user of SNS is aware that, for example, spending time in certain parts of a site makes them feel worse, then they will be more likely to avoid it in order to maximize positive emotions and minimize negative emotions (Gross, 2015). This allows the user to reduce their overall passive time spent using SNS.

The next stage of the process model of emotion regulation is situation modification (Gross, 2015). This stage refers to taking actions to change the situation and alter the emotional impact. In a SNS context, this might look like the users changing their online community or news sources, by 'unfollowing' or 'unfriending' toxic people or strangers and deleting distressing content. Situation modification refers to internal situations, as well as external. This means the individual attempts to change their internal thoughts and processes for the better (or sometimes worse) (Gross, 2015). An example would be the SNS user actively trying to be happy for a friend who posts vacation photos, rather than envious.

The next strategy, attentional deployment, refers to the individual directing their attention towards or away from the emotion-eliciting experiences (Gross, 2015). One of the most common methods of attentional deployment is distraction, where the individual shifts attention away from a negative stimulus to a more neutral or positive one. The healthy user of SNS might have shifted their attention away from negative news stories, to more positive, uplifting stories, for example. Or if SNS use was becoming stressful in general, they may have found other activities to replace this, such as exercise, watching tv, or face-to-face socializing.

Cognitive change is the last antecedent-focused strategy, and is utilized when the user constructs a different, more positive interpretation out of the many available interpretations of the situation (Gross, 2015). Reappraisal often refers to this form of emotional regulation, although colloquially, the other antecedent-focused strategies are often referred to by many researchers as reappraisal strategies (Gross, 2015). Reappraisal could have a profound effect in the way an individual uses SNS in a healthy manner. Social comparison, envy and FOMO, are three examples of how users can negatively engage on SNS (Settle, 2018), and can be

mitigated or eliminated through positive affirmations people can make (e.g. “I’m not missing out on anything, these other people are just making it look like a better time, than it actually is”).

By having a limited time-frame to use social media throughout the day, participants in the experimental condition may have tried to maximize their beneficial use of SNS by being a more active user. This is a reappraisal strategy in that the users are now trying to get the most out of their time online by engaging in activities that increase wellbeing. This could be done by only engaging with close friends, updating their own personal information, and reducing time spent browsing on strangers’ profiles or looking at news articles. In contrast, participants of the control condition would not have been actively regulating their responses while on social media, as they were asked to continue using it as they normally would.

Perhaps they had been primed by the questions of the survey, including the questions of the Emotion Regulation Questionnaire, the DASS and the questions about whether they thought social media was good or bad for them. The ERQ includes several items that score on the reappraisal factor. These include “*when I want to feel more positive/less negative emotion, I change the way I’m thinking about the situation*” (John & Gross, 2004, p. 1311). Each participant would have been aware of the aims of this study and had each been provided with plenty of information about what this study entailed (Appendix I.). They may have had these aims in mind as they filled out the surveys and recorded their app data. Implicit emotion regulation, also known as unconscious or automatic emotion regulation, operates at a level below the individual’s awareness. It is goal-driven and happens without deliberate action (Wang & Li, 2017). In a priming-identify task by Wang and Li (2017), participants’ emotion regulation responses were able to be unconsciously manipulated based on exposure to key

phrases and words. It is possible that the participants in this study were unconsciously altering their behaviour to conform with the aims of the study, or modulating their responses based on information they had previously read about social media.

Of course, with the limitation of the small sample of SNS data, conclusions between SNS and emotion regulation are difficult to draw. However, the results are consistent with other studies, in that emotion regulation is indirectly related to SNS use through its relationship to mental health and mood (Rasmussen et al., 2020). It is important in future research that sample sizes are adequate, but possibly more important to explore these indirect relationships and discover where the confounding variables lie.

5.5 Attitudes towards SNS Use

The majority of participants held unfavourable views toward SNS for personal use, and the impact SNS has on society. These unfavourable views persisted and were strengthened at the post-test.

Social network for personal use had some variation in whether people believed it was a positive or negative tool for wellbeing, but most people believed it was either "*Very Bad", "Bad*" or "*Neutral"* (80.7%). Comments from participants reflected this sentiment, such as *"it depends on how it is used*" and "*it affects my mental health daily*". These attitudes were reiterated in the second question that asked about whether social media is good or bad for society. The results of this question were more skewed toward "*Bad*" and "*Very Bad*" (42.1%) and a further 42.1% saying they feel "*Neutral"*. The final 15.8% said social media is *"Good*" for society. Participants gave a broader range of reasoning in the comments, citing

the impact social media can have on political systems by spreading “fake news”, the proliferation of “cyberbullying”, and celebrities that hold too much influence over their followers.

In Liebert and Chou’s research (2001), 45.8% of respondents stated that internet communication enabled them to have better relationships with friends, and 54.2% claimed that they have even made new friends over the internet. Clearly, socializing with friends and family is an important aspect of social networking (Hogan & Strasburger, 2018). Many participants in the present study cited increased and effective communication with others as one of the primary reasons why they engage in SNS.

5.6 Profile of Mental Health in a NZ University

Each participant entered demographic data describing their age, gender, work status, and student status. This collection of data provides an insight into those students, staff members and others who spend time on a New Zealand university campus. This study therefore paints a relevant and contemporary picture of the mental health in New Zealand universities.

The results from this study show that mental health is a legitimate cause for concern in New Zealand universities, with the average scores of depression, anxiety, and stress among full-time and part-time students meeting the requirements of ‘mild’ according to the DASS scoring guide (Lovibond & Lovibond, 1995).

Female participants in this study were found to have higher rates of anxiety ($M_{difference}$ = 3.68, t = -2.28, p < .05) and stress than male participants ($M_{difference}$ = 6.17, t = -3.11, p < .005). Similarly, in Samaranayake, Arroll and Fernando (2014) and Oakley-Browne and colleagues' (2006) research, female participants in New Zealand were more likely than males to experience anxiety, but they were also more likely to experience higher rates of depression, contrasting with the present study.

In comparing regulation style, male participants were more likely than female participants to use expressive suppression ($M_{difference}$ = .60, t = 2.164, p < .05), and there were no differences in cognitive reappraisal. This result is interesting in that expressive suppression is a significant predictor of anxiety, yet in this current study male participants scored significantly lower than female participants. This result was also seen in Elhai and colleague's research (2018a). These gender differences in expression of emotion are explained by Webb, Miles and Sheeran (2012). Females tend to be better than males at expressing and controlling emotion (which would account for the decreased proportion of expressive suppression). Females may also experience emotion in greater intensities than males, which would then account for the greater incidence of anxiety and stress in this sample.

Finally, while the means of the DASS were higher for students than those engaged in work, the participants of different student status (full-time, part-time or not studying) were no more likely to score higher in the DASS than each other. Nor was there a difference in the scores of the DASS between the types of employment, (full-time, part-time/casual, or unemployed). However, full-time workers were much less likely to utilize expressive suppression than those with other work status.

This research found that there was no correlation between time spent using SNS and age, gender, student-status, and work-status. These results mirror findings in similar studies, such as in Barnes and colleagues (2019) and Elhai and colleagues (2018a). These researchers also found no link between age and gender for SNS addiction. They also found that education level also had no correlation. It can then be concluded that SNS use is constant across age and social groups.

5.7 Implications of the Findings

The first hypothesis, that mental wellbeing has a relationship with SNS, was partially confirmed. Anxiety and stress scores were lower at the post-test in the experimental group (who reduced their SNS use), while scores did not change in the control group. Depression had no significant change between administration of the pre-test and post-test in either condition. This result is evidence that SNS use has at least some relationship with mental health. This relationship was further explored in the second and third hypotheses, which were that emotion regulation had a relationship with SNS use and mental health. While the second hypothesis was not confirmed, and the third only partially confirmed that expressive suppression, and not cognitive reappraisal, predicted depression and anxiety, this study helped further explore these series of direct and indirect relationships. This study found that certain emotion regulation styles predicted mental health problems, and that changing how SNS is used, will have a significant positive impact on mental health. There are several important implications to be gathered from these findings that are further discussed in this section.

In this study, it was expected that there would be a relationship between SNS use and mental health. As SNS use decreased, mental health issues would also decrease. These mental health issues were able to be predicted according to emotion regulation styles. The results partially confirmed this in that anxiety and stress were significantly reduced in the experimental group after a two week period of mindful SNS use. While the quantity of SNS use was not significantly different between the pre-test and post-test among the experimental group participants, this study provides some evidence that using SNS in different ways produces different outcomes. It is likely that participants engaged in more effective emotion regulation strategies to modulate their responses as they used SNS throughout this study. In particular, participants engaged in antecedent-focused emotion regulation to achieve improved mental health. This means acting in advance to alter the trajectory of the emotion course (Gross, 2015). In the context of this study, the participants changed their online behaviour in order to produce optimal emotional gains. In contrast, the control group used SNS as they normally did, without purposeful emotion regulation.

These results highlight the transactional nature of emotion regulation, mental health and SNS use. Emotion regulation and mental health share an important relationship where the cycle is perpetuated by affect, behaviours and the strategies used to regulate mood and emotion (Gross, 2015). Mental health and SNS then have a relationship where the content on sites such as Facebook, can influence mental health, while the present mood of the individual, whether they are depressed, stressed, or anxious, then plays a role in their online behaviours (Rasmussen et al., 2020). No single factor causes the other, rather it is an inter-play where each factor must be taken into consideration separately and together.

This study contributes to the conversation around active versus passive SNS use, or the quantity versus quality debate (Vahedi & Zannella, 2019). While there have been fears that people who spend too much time using SNS will develop problems with their mental health, this research suggests that the quantity of SNS use is unimportant, and rather it is how people use SNS which deserves more attention. Furthermore, as people use different emotion regulation strategies to manage their affect, different strategies should be developed on how to use social networks according to what works best for them.

In using the process model of emotion (Gross, 2015), users of SNS will be able to change their online behaviour appropriately based on when this environment starts to become harmful to their mental health. When compensatory behaviour is antecedent-focused, the user will enjoy greater mental health benefits and will use SNS responsibly and safely. This is compared to when behaviour is response-focused and the user is behaving according to the already well-developed emotion (Gross, 2015).

In clinical settings, therapists can use this information to design treatment plans for patients with harmful SNS behaviour. Specifically, therapists can teach patients where and when problem emotions, such as envy, social comparison, and FOMO can arise, and how they can effectively deal with them in a healthy manner. Education about emotion regulation can help the patient understand what processes they are taking to regulate themselves and how they can use reappraisal techniques, rather than suppression, to provide good outcomes. The patient can be encouraged to use SNS more actively, rather than passively, which will then lead to greater mental health benefits. In other words, mindfully engage with others, identify and reduce exposure to harmful messages and groups, and avoid situations in which negative social comparison would arise. These techniques could be utilized in places where

people may be vulnerable to the pitfalls of social media, such as children and adolescents in schools (Blau, Goldberg, & Benolol, 2018; Yang & Brown, 2013), and people who are regularly impacted by stress, like students in Universities and employees in workplaces (Heffer et al., 2019; Rideout & Fox, 2018).

This study helps clarify misconceptions around SNS use in the media, and the idea that extended use of sites like Facebook, Instagram, and Snapchat lead to mental health problems. This link between time spent on social media and mental health may be a moral panic perpetrated by the media, in the same way as heavy metal music lyrics, extended television watching, or violent video games have been (Markey & Fergusson, 2017). How SNS is used requires a far more nuanced understanding than the simplistic explanation of the quantity of use as provided by popular media. As such, more dialogue around healthy online behaviours should be included in media discussions. This may include identifying cyberbullying as a cause of depression and stress for younger people (Hinduja & Patchin, 2010), and the number of strangers followed as being a source of increased social comparison (Lup, Trub, & Rosenthal, 2015).

The participants of this current study provided a range of demographic data in the surveys. This allows a picture to be painted about mental health and emotion regulation use in a New Zealand University. The results showed that female participants experienced significantly more stress and anxiety than males, and males were more likely to use expressive suppression. As a result of this study, providing more services to help students combat stress and anxiety, especially female students where it is especially prevalent, would be worthwhile.

5.8 Strengths and Limitations

This study takes full advantage of the benefits and ubiquity of modern technology. As part of the requirements for taking part, participants needed to be active users of SNS apps on their smartphone, this means they were capable of downloading the *Moment* app. Where previous studies examining the effects of social media on health used traditional, self-report measures to determine time spent as a user (Twenge, Martin, & Campbell, 2018b; Allcott et al., 2019), this study uses *Moment* to take a record of their app use, accurate to the minute count of each app, each day. Furthermore, being able to quickly and effectively export this data allows faster and cleaner analyses by the researcher. Combined with the widely-covered advantages of online surveys (Lenhart et al., 2015), participation throughout the entire study could be conducted wherever and whenever the participant felt comfortable and from their own internet-capable devices. Although the digital fluency of participants needs to be considered, as it remains unclear if participants capabilities are advanced enough that independent participation can be achieved.

Accounting for emotional regulation shows how social media use affects people differently. As research by Elhai and colleagues (2018a) showed in scenarios of imagined technology and social media loss, those with maladaptive emotional regulation strategies tend to score higher in the DASS subscales. By including the ERQ, participants can be assigned into either the expressive suppression or cognitive reappraisal groups. Trends in SNS use and emotional wellbeing can thus be contrasted with emotion regulation styles to determine who gains either positive or negative outcomes.

This research is relevant to a wide population. Presently, 95% of New Zealanders regularly use the internet every day. A further 81% have a smartphone and 62% use social media on their phones every week (Bascand, 2013; Yeh, 2019). Prior research supports these high rates of internet and smartphone use both in New Zealand (Hartnett, 2017), and worldwide (Kaplan & Haenlein, 2010). Smartphone and SNS use are now ubiquitous with interconnected, modern, technological living (Klier, Klier, & Wigand, 2017). While the participants recruited in this study were localised around a University campus in New Zealand, there is variety in the age, gender, work-status and student-status of the sample. As such there is good external validity in that the results can be applicable to many populations both in New Zealand and around the world, and can offer benefits for all users of social network sites.

A limitation of this kind of research is that the app *Moment* was not purpose-built for academic studies. Instead, it was built for a consumer market. Therefore, participants are seen in the eyes of the app market as customers and are thus a potential source of revenue for the profit-driven developers. It is important to note that the app is free to use, however, there are options for a 'premium' version that gives the user extra features. It was important that the participant's privacy and personal data were safe while using the app. The terms of service and privacy policy were checked carefully to ensure participant's rights were protected, but the point that this is a commercial, not an academic app, still stands, and participants in this study would have been exposed to an in-app sales-pitch to purchase the premium version. The app includes a multitude of features that were irrelevant to the interests of the study, including the ability to notify the user when the screen time of an app was approaching a user-set daily limit. It was necessary for the participant to turn off these features and keep only that which was relevant to the present study. By leaving on the other features of

Moment, the participant would have been inundated with notifications and options for irrelevant features of the app. If the participant did not follow all instructions, however, they may have left these settings on, which would have caused a degree of annoyance that may have led them to drop out, or affect the findings of the study (Hooghe, Stolle, Mahéo, & Vissers, 2010). It would prove beneficial in future studies to use a purpose-built and less intrusive tool of screen recording. This would fulfil ethical obligations to the participant that does not expose them to irrelevant and distracting features of the app.

Another limitation concerns the rates of attrition for participants. This study requested participants to be involved for two weeks with a number of tasks to complete. As many of the participants were students at a New Zealand university, they may be under pressure from their studies whilst taking part in this research. As discussed earlier, the mean scores for depression, stress and anxiety among full-time and part-time students reached the DASS classification for 'mild' (Lovibond & Lovibond, 1995). Many participants may have seen this research as a distraction and thus a lower priority or felt too stressed to take on any extra projects.

The rate of attrition for this study may be attributed in part to the attention span of participants, or their loss of interest shortly after beginning. It is possible that after completing the pre-test and installing *Moment*, participants either forgot about the study, decided it was not worth their time, or became distracted by other life commitments (Hooghe et al., 2010). Two follow-up emails were sent to each participant who completed the pre-test. The first was to remind them which group they were in, how to install the app, and included a link to the post-test. The second email was sent later to inform them that they still had an opportunity to complete the post-test in case they had forgotten. Hooghe and colleagues

(2010) discuss how these follow-up emails are necessary to prevent attrition in student and non-student samples. However, as anonymity was to be maintained, other forms of correspondence (phone calls, text messages, etc.) was impossible.

The attrition rate was approximately equal between the control and experimental groups. The control group had 46.34% of its participants complete the post-test, whereas the experimental group had 43.90% complete the post-test. This fortunately, increases the internal validity of the study as it may imply attrition was due to external influences (Hooghe et al., 2010). However, as the attrition was high among both groups, it can be reasonably assumed that the conditions of the experiment had some impact. For example, the participants in both the experimental and control group may have found the demands of the study, with regard to completing the post-test, too difficult. To also be considered, is that most participants were either studying full or part-time, were recruited throughout the university semesters, and many participants had other work commitments. This may have contributed to the attrition rate as course-work can quickly build up, including assignments and studying for exams. Hooghe and colleagues (2010) describe a phenomenon where two extremes of participants lose interest in the study for different reasons. The first group may not be very interested in this subject to begin with, in other words, they do not feel that SNS usage is a threat to their wellbeing and fundamentally disagree with the research hypothesis. The other extreme is the participants who hold a great interest in this subject, but this experiment does not do enough to trigger their fascination. They decide they know enough about the mechanisms of their own SNS use and how it affects their wellbeing.

A limitation was that the ERQ was not administered a second time to participants in the post-test. In Gross and John (2003), the test re-test alpha reliability for both scales across

three months was .69. As this study was only conducted over two weeks, it is unlikely there would have been any significant changes in the ERQ scores between pre-test and post-test. However, in future studies, it may be worthwhile to consider adding it into the post-test. Gross (2014) discusses how emotion regulation strategies change throughout the lifespan, but it is unclear whether emotion regulation strategies can change within a matter of weeks. By including the ERQ a second time, participants may have shown improvements or declines along the two subscales.

Technical limitations are a barrier when introducing foreign software to the sample. Participants were not asked if they had any experience in downloading and installing software before on their mobile phones. Instructions were therefore worded in a way that assumed there was no prior experience and made to be as easy-to-follow as possible. This included breaking down each step of the downloading, installation, and operating the *Moment* app. Some participants contacted the researcher to ask for help in the installation process, but it is unclear if there were more participants who encountered difficulties. Therefore, it is possible that some participants may have become confused at any stage of the process, and felt it was too difficult to continue.

Technical limitations may have existed in the form of varying smartphone technology. The recruitment material specified only participants who used social media regularly on their Apple or Android devices should become involved. However, these are broad classifications. For Apple iPhone users, they needed iOS 11.2 and above to be able to run it, while Android users require version 5.0 and above. Participants with older devices would have encountered much more difficulty than participants with newer ones. General bugs and issues may have existed that were unaccounted for and these may have varied between each user.

Otherwise, people may have generally failed to understand the instructions. As this experiment required several steps of work on the part of the participant, at some point the participant may have gotten lost, confused, or frustrated. It is understandable they may have felt this way due to the volume of tasks they were asked to complete, including pre-test and post-test, email reminders, and managing the *Moment* app over the two-week period. These requirements may have become intimidating or hard to follow, and some participants may have opted out in order to complete an 'easier' alternative experiment that would have surely been offered by other post-graduate students at the university where this study took place, that would have been started and completed in a short time-frame.

5.9 Ethical considerations

There are a number of ethical considerations that were taken into account throughout the design and duration of this research. Prior to the commencement of this research, ethical approval was gained from the Human Research Ethics Committee (Health) of the University of Waikato as HREC(Health)2019#27. This committee carefully inspected the research procedures of the current study and provided recommendations to the author.

A priority was protecting the participants that were taking part. As the pre-test and post-test contained the DASS, which is able to detect clinical levels of depression, anxiety and stress, it was first emphasized to potential participants in the recruitment stages to refrain from volunteering if they were currently experiencing any emotional difficulties. To those who decided to continue to take part, support information was provided throughout the

surveys. This included contact information to local and national support agencies for people experiencing emotional difficulties.

If SNS addiction was a real possibility for some of the participants in the study, then it was important that this was handled carefully. Unfortunately, as there are no agreed-upon definitions for social media addiction, the existing literature is light and there are little to no recommendations on how the subject should be approached (Ryan et al., 2014). It is difficult to say, based on the quantitative data of SNS use in this study, that any of the participants were using it too much or problematically.

As the surveys used, particularly the DASS, included sensitive questions, it was important to maintain the confidentiality of all participants. Requiring anonymous participation prevented any embarrassment that may have occurred due to the disclosure of time spent on SNS or the mental health and wellbeing of the participants. Participants were required to create and use a unique identifier throughout the research. At times it was important to gather personal information including email addresses. This was to either provide them with course marks if they were participating as a student or include them in a prize draw. Any sections that asked for personal information were presented separately from the pre-test and post-test. This meant that any scores provided on the surveys were not linked to personal information. Protection of identities was made clear to participants throughout the research.

Participants that were students in certain classes were prevented from taking part. As the lead researcher worked as a Lab Instructor for some course papers, students in those

papers were excluded to prevent any potential conflicts of interest. This was communicated to participants throughout the recruitment process and survey information screens.

Ethical consideration was given to the downloading and installing the *Moment* app. As this app requires certain permissions from its users, it was important that the data rights of any participants that used this app were protected. While *Moment* does collect data from its users, it does so for legitimate purposes. These include app support, delivering better experiences for customers, complying with legal obligations, to authenticate users, and ensure the safety and security of users. Any information generated by the user is owned by the user, and data collection stops as soon as the user uninstalls the app. All data collection by *Moment* is anonymous and is transferred and held securely. This information can be viewed in their Terms of Service and Privacy Policy through the app or on the company website (Moment, 2019).

When the Moment data was exported to the researcher, it was made clear to the participant that only certain apps were relevant to the study. These included Facebook, Snapchat, Instagram, Twitter, and Tinder. Any other app that was included in the exported data was deleted immediately by the researcher in order to preserve and respect participants privacy and declutter the data so that interpretation was easier.

It was important that informed consent was provided to all participants who chose to proceed with the study. Before beginning the first pre-test survey, participants read a summary of their rights and agreed to an online consent form (Appendix K). This was presented after the information page, and before the questionnaire. The consent form included information about their data being kept confidential and anonymous, that they had

been given adequate time and information to make an informed choice, and that the information they provided would be used for this academic purpose. Furthermore, at each stage of the experiment participants were reminded that they were able to withdraw from the study without any penalties whatsoever. These were included in each of the email reminders and at the beginning of the post-test (Appendices A, E and F).

5.9 Recommendations for Future Research

Any possible levels of SNS addiction require special consideration in any future research that requires changes in how people interact with social networks. As participants in this study demonstrated, regulating SNS use is much more nuanced than expected. Participants should first be assessed on whether they have any pre-existing SNS, or general internet or smartphone addiction. This would help to understand attrition rates, and how participants struggle in regulating their SNS usage. Furthermore, any follow-up tests should include questionnaires on any difficulties the participants faced during the study. Feedback is an important tool that can help improve future studies.

While this study used the DASS and the ERQ as its only measures of mental well-being and emotion regulation, numerous other measures exist. While other inventories of depression, stress and anxiety can be used, it may prove beneficial to ask participants if they subjectively feel happier. Life satisfaction is another measure of subjective well-being that may prove useful to assess.

If unhealthy social network use is indeed based on the quality of use, rather than quantity, other measures of mood and emotion should be measured too. These may include

measures of envy and jealousy, ratings of social comparison, self-esteem, and the degree to which participants have FOMO. Cyberbullying is prevalent among certain populations, so it may be necessary to determine the extent to which people are affected by this while taking part in research of this kind. Of course, support information would need to be included.

Emotion regulation is measured in a variety of ways depending on the theoretical approach used. The Difficulties in Emotion Regulation Scale (DERS) by Gratz and Roemer (2004) measures emotion regulation according to six subscales: nonacceptance; goals; impulse; awareness; strategies; and clarity. This inventory allows an alternative perspective of emotion regulation to take place and different ways to quantify and evaluate the emotion regulation practices of participants, rather than just cognitive reappraisal and expressive suppression as in the process model of emotion regulation (John & Gross, 2004). The Generalized Expectancy for Negative Mood Regulation Scale could also be used to measure the degree to which the participant uses mood regulation when they are in a negative state, and would prove useful when the study involves examining participants while they engage in activities that result in adverse health outcomes (Catanzaro & Mearns, 1990, as cited in Gratz & Roemer, 2004).

The development of a tested, robust method of app recording would be beneficial. While automatic, electronic recording presents a significantly more accurate method over self-report measures, improvements and checks can still be made. Beyond short pilot testing at the beginning of this study, *Moment* has not been widely tested for this academic purpose. It is therefore unknown to what degree *Moment* is suitable for data recording beyond commercial purposes. A custom-built app to record data would serve the sole requirements of the study, without adding unnecessary, confusing features. Participants may be more inclined

to trust that app too, in that their user data will be better protected. There could even be features developed into the app that restrict certain SNS apps completely.

5.10 Summary

This study was conducted to determine the extent to which SNS use interacts with mental health and emotion regulation. The first hypothesis stated that there will be a positive relationship between mental health and time spent on SNS. The results partially confirmed this hypothesis in that participants in the experimental group experienced decreased anxiety and stress scores after two weeks of reduced/altered SNS use. Although time spent on SNS was not significant, the reduction in anxiety and stress signals that there is a relationship between these factors. An explanation for this result may be that while participants did not reduce their SNS use, they changed how it was used. In other words, SNS use and its relationship with mental health are based on its quality of use versus the quantity of use. This distinction can be further summarized into passive versus active use, where passive users do not engage, communicate or contribute to their online environment, whereas active users do. This discussion is supported by literature where passive users are shown to have higher rates of depression, stress and anxiety, as well as increased envy, jealousy, the tendency to compare themselves socially, and have FOMO, or the fear of missing out (Elhai, Levine, Dvorak, & Hall, 2016; Hogan & Strasburger, 2018; Lin & Utz, 2015; Lup et al., 2015; Sagioglou & Greitemeyer, 2014; Settle, 2018; Tandoc, Ferrucci, & Duffy, 2015; Vahedi & Zannella, 2019; Verdyun et al., 2015).

The second and third hypotheses stated that the emotion regulation measures of expressive suppression and cognitive reappraisal will predict SNS use (Hypothesis 2) and

mental health (Hypothesis 3). In particular, participants who favour expressive suppression will use SNS more and have worse mental health, and those who favour cognitive reappraisal will use SNS less and have better mental health. The second hypothesis was rejected, SNS use was not predicted by emotion regulation. The third hypothesis was partially confirmed though, expressive suppression was a significant predictor of depression, stress and anxiety. This provides support for an indirect relationship between the three factors, that are transactional. Emotion regulation and mental health are closely tied, while mental health both governs and is governed by SNS use. When applying the process model of emotion regulation to SNS use, there are several points at which users could be regulating their usage and emotions in different ways to produce more desirable outcomes. These include using cognitive reappraisal strategies to mindfully use sites such as Facebook, Instagram and Snapchat, and reduce their negative impact.

In addition to testing these three hypotheses, this study provides insight into student populations in New Zealand. The majority of the participants were studying full or part-time, and the data provides an insight into mental health difficulties they were currently facing and their emotion regulation styles. This data can be further broken down by age, gender, student-status, and work-status. The majority of participants were female (77.19%), between the ages of 16 and 25 (73.68%), studying full time (78.94%), and were in part-time or casual employment (50%). The results showed that female students experience higher rates of anxiety and stress than male participants, but the rate of depression was not different between the two groups. Males were also more likely to engage in expressive suppression than females, and there was no difference for cognitive reappraisal. These differences can be attributed to the ways in which females engage in better emotion regulation practices but experience these emotions in a greater magnitude (Webb et al., 2012). There were no

significant differences in mental health between participants of different work and student-status.

Current attitudes towards social media are displayed in this study. The participants were each asked about the extent to which they thought social media sites were good or bad for themselves, or for society. These items of the survey were presented at pre and post-test and were included to determine if attitudes had changed throughout the study, and to gather insight into why the students liked or disliked using these platforms. This study found that attitudes toward social media for themselves personally and for society were skewed toward the negative. Participants who left comments stated how social media can be used for negative purposes, such as cyberbullying, negative social comparison and fake news, but has positive aspects in that it helps connect friends and family.

There were several limitations to this study. The attrition rate was high, where 35.2% of participants failed to complete the post-test after they completed the pre-test, and a further 44.7% failed to submit their app data. This rate of attrition is likely indicative of difficulties that participants encountered when using the *Moment* app, higher rates of SNS addiction that were previously expected, and experimental fatigue over the two-week period.

Although there were considerable limitations to this study, there are still important implications for the results. This study provides clarification around the passive versus active SNS use debate, and what is deemed to be healthy online behaviour. Emotion regulation is discussed in relation to SNS use and how people modulate their emotions.

Suggestions for future research were discussed. The app used, *Moment*, is a commercially produced app that was not designed for academic study which presents ethical as well as practical implications. The extent of the technical limitations is not known due to the privacy of participants, and its host of other features distract the user from the purposes of the current study. A custom-built app would provide highly accurate and accessible data much more efficiently.

In the final chapter concluding this thesis the main findings of this study are summarised. Conclusions are drawn and recommendations for future research to be undertaken are suggested.

CHAPTER 6

CONCLUSION

6.1 Introduction

In this investigation, the aim was to determine the extent to which social network use is associated with mental health problems and how people regulate their emotions. This chapter concludes the thesis and begins with an overview of the research. Major findings are discussed and each research question that was posed will be answered in turn. The significance of this research and how these findings can be applied in various contexts will be discussed next. The strengths, limitations, and recommendations for future research will follow. The chapter will conclude with a summary and final comments.

6.2 Overview of Thesis

Social networking is now ubiquitous with a modern, technologically interconnected society. The most popular platforms now have millions, and in some cases, billions of users who spend almost an hour each day on average on these online communities (Settle, 2018). Although these sites have been present for nearly two decades, the extent to which social networks impact its user's mental health is still unclear, and how their users continue their sometimes harmful online behaviours, despite experiencing a worsened quality of life (Hogan & Strasburger, 2018). Chapter One introduced the ubiquity of social media both in New Zealand and worldwide, and then discussed the motives for this research. These motives were to determine if mental health is able to be experimentally manipulated through people's

social network use, to establish the link between emotion regulation and social network use, and establish the link between emotion regulation and mental health.

Chapter Two of this thesis presented a review of the previous literature in social media research, and how they relate to mental health and emotion regulation. While there are some inconsistencies in what is considered to be the cause of mental health problems with social media use, research does tend to agree there is a correlation. By applying theories of emotion regulation, understanding the mechanisms behind maladaptive social network use becomes clearer. According to Gross and John (2003), and the process model of emotion, people tend to regulate their emotions through cognitive reappraisal or expressive suppression. In other words, they will alter the way they think about a situation, or how they respond to a situation. When described like this, cognitive reappraisal is antecedent-focused and expressive suppression is response-focused. Whether an individual engages in either of these emotion regulation strategies alters the trajectory of the emotional response to a stimulus, such as an emotion-eliciting situation on a social network site.

This research sought to understand these relationships between social network use, mental health and emotion regulation. Chapter Three of this thesis discussed the methodology used for this study in detail. By quantifying social network use with modern research techniques, and applying an experimental, pre-test post-test research design, this study attempted to draw correlations and predictions based on how much time participants spent on social network sites, their emotion regulation style, and whether there were any differences to their mental health. There were 114 participants gathered from a New Zealand University campus who completed the pre-test, and 38 who completed the post-test. The pre-test consisted of a short survey consisting of demographic questions, the Emotion Regulation

Questionnaire (ERQ; Gross & John, 2003), the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995), and some questions about attitudes toward social media. The participants were instructed to download an app onto their smartphone that would record their social network usage over the next two weeks. After this time period, they were instructed to complete the post-test, which was the same survey except without the ERQ, and to upload the social network usage data. The participants were randomly split into an experimental and control group. The experimental group was asked to use social networks as normal for the first week, and then reduce to 30 minutes per day for the second week. The control group were asked to use social networks as they normally would for the entire two week duration. Justification for the techniques utilised in this research was included, as well as the processes in which data would be collected, analysed and interpreted. The DASS and the ERQ were described in detail and an explanation was provided as to why they were being used in this context.

Chapter Four began with a description on how data was analysed and interpreted for the purposes of this study, using a variety of statistical methods, including correlational coefficients, regression analyses, t-tests, ANOVA's and qualitative analyses. A note was made on the extent to which there was missing data as a result of participant attrition. Each research question was discussed in turn using the appropriate statistical analysis. Using the demographic data provided by the participants, a profile of mental health and emotion regulation was made to reflect a New Zealand University community. Each of the participant's opinions and attitudes about social media for personal use and for society was captured.

A discussion of the results followed in Chapter Five, comparing them to existing literature. Interpretations of the results followed in order to theorise why the results occurred and whether they can be explained using existing theoretical approaches. Important implications were discussed and whether there might be any practical applications in various settings. Strengths, limitations, and ethical considerations were examined, before including recommendations for future research in this area. Each of these factors was presented in a way that would allow prospective researchers to apply the strengths and combat weaknesses in future studies.

6.3 Major Findings of the Study and Answers to the Research Objectives

The results of this experiment produced a wealth of information about participants' social networking behaviour, their attitudes toward social media, their mental health before and after the experiment, and emotion regulation style. Conclusions from the major findings related to each hypothesis are detailed below.

6.3.1 Hypothesis One

The first hypothesis set out to determine whether time spent on social network sites was positively correlated with increases in mental health problems. By including a control and experimental group, it was expected that scores of the three DASS subscales, depression, anxiety, and stress, would decrease as participants of the experimental group decreased their social network usage.

The results partially confirmed this hypothesis, in that scores of the DASS subscales stress and anxiety were significantly decreased among participants in the experimental group between pre-test and post-test. However, time spent on social network sites was not significantly decreased, as per the instructions of the experimental condition. In comparison, participants of the control group did not experience any decreases in the three DASS subscales. These results suggest that the quantity of social network use has little to do with related mental health changes, but rather quality of use. Participants in the experimental group did not significantly decrease their usage, they instead became more mindful of the time they spent online, in turn affecting their behaviour and resulting mood. This result is important as it provides evidence that the length of time spent using social network sites is not as important as how these sites are used.

6.3.2 Hypothesis Two

The second hypothesis sought to determine the link between the emotion regulation styles: expressive suppression and cognitive reappraisal, and time spent on social network sites. The hypothesis was that participants who favoured an expressive suppression emotion regulation style would spend more time on social networks, while those participants who favoured cognitive reappraisal would spend less time on social network sites. This hypothesis was created to help explain why some people spend more time on social network sites and whether their use was to help regulate their emotions.

The results rejected this hypothesis, as no significant link was found between time spent on social network sites and emotion regulation style. A series of regression analysis and correlation coefficients showed that these factors shared little to no relationship, and they

were unable to predict one another. These results are supported by findings in similar studies where people's emotion regulation strategies do not share a direct relationship with social network use, but rather an indirect relationship which is then discussed further below in hypothesis three (Rasmussen, Punyanunt-Carter, LaFreniere, Norman, & Kimball, 2020).

6.3.3 Hypothesis Three

The third hypothesis asked if there would be a significant relationship between emotion regulation style and mental health. Expressive suppression was expected to predict increased depression, anxiety and stress, while cognitive reappraisal was to be the opposite.

The results of this study partially confirmed the hypothesis that expressive suppression was able to significantly predict depression and anxiety, but not stress. This result was further supported by a moderate positive relationship between suppression, and depression and anxiety. These results demonstrate that because emotion regulation predicts anxiety, and anxiety was able to be experimentally manipulated there must be a series of direct and indirect relationships. These can be interpreted through participants experiencing anxiety as a response to the stimuli on social network sites. By changing how one interacts with social networks, such as mindfully using social networks or by reducing the quantity of daily use, the participant moved to an antecedent-focused emotion regulation style, rather than response-focused as with expressive suppression (John & Gross, 2004).

6.4 Profile of Participants

As participants submitted information about demographic factors, the sample was able to be described according to age, gender, work-status and student-status. Differences were found for these groups, where female participants were more likely to have higher stress and anxiety scores than male participants, and male participants were more likely to use expressive suppression. There were no significant DASS score differences between the age groups, nor for different student-status. Those in full-time employment did experience lower expressive suppression than those in part-time/casual employment, or unemployed.

6.5 Attitudes Toward Social Media

To determine attitudes toward social media sites, each participant rated the degree to which they believed social media was good or bad for themselves and society on a 5-point Likert-style questionnaire. They also had the opportunity to leave a comment explaining their rationale.

The majority of participants felt that social media had a neutral or negative impact on themselves and society at pre-test. These attitudes persisted through to the post-test. Participants who added optional comments in the questionnaire talked negatively about social media's impact on self-esteem and peoples' obsessions with their online persona. Other negative points raised concerned celebrity worship, cyberbullying, and the spreading of hateful and harmful gossip or news. However, some participants gave positive comments which discussed social media's ability to connect friends and family around the world and spread positive messages.

6.6 Significance and Implications of the Study

This study presents a significant opportunity to increase awareness of healthy online behaviours among social network sites like Facebook, Instagram, and Snapchat's many users. If the current amount of literature on this topic is any indication, these users, both vulnerable and otherwise healthy, are unaware of the emotional processes they are undertaking when online. Poor mental health outcomes are associated with social network use, although this study argues that it is not the quantity of use that is the culprit, as previously stated in other research, but rather the way it is used. Having an understanding of what emotion regulation strategies are being used when emotion-eliciting situations happen online can drastically alter the trajectory of the emotional outcome, reducing the harmful effects and increasing the good. The participants of the experimental condition showed that, while they did not reduce their social network use significantly, they altered the way they used it enough to make significant decreases in anxiety and stress. This signifies an approach to social network use that is mindful and active, rather than passive.

6.7 Limitations and Future Directions

This study is among the first to use app-tracking software to record data about a modern, but poorly understood phenomenon. An experimental, pre-test/post-test design over a two week period was used, with the results showing marked differences between the experimental and control group conditions. These results were significantly backed by statistical analyses. Limitations do exist in this study, however, including a large attrition rate from participants. Of the 108 out of 114 participants who completed the pre-test, only 38

completed the post-test. Of these participants who completed the post-test, only 21 submitted their app usage data. These represent significant problems in one or more aspects of the study design. A primary reason may be the complexity of the research. It involved two surveys over two weeks, as well as the use of an unfamiliar app, and a complex set of instructions. Participants were mostly recruited from undergraduate psychology courses and were participating in return for course credit. It is possible that they experienced fatigue from the study and opted out of the research.

It is also likely that the app used to record the social network data did not work as intended for many participants. Some participants may have found the app or instructions confusing and complicated, and some participants may have experienced technical problems. This app was created as a product for commercial and not academic purposes and was never intended to be used for large-scale research. As such, it has numerous features not relevant to the study that may have confused and distracted participants.

This study was helpful in identifying strengths and limitations in research using app-tracking technology. Future researchers should consider constructing a purpose-built app tracking tool to gather data, to ensure they have an efficient way to collect and organise data. This will, therefore, make participating in future studies easier and help reduce attrition effects.

This study further demonstrated the integral role of emotion regulation in maintaining good mental health. As mental health is now proven to be linked with social network site use, helpful emotion regulation strategies need to be further explored and clearly defined for problematic social network site users.

6.8 Final Comments

The purposes of this study were to identify the relationships between social network site use, mental health problems and emotion regulation. Participants were gathered from a New Zealand University and were tasked to participate in an experimental pre-test post-test study that included an examination of their social networking usage, current levels of depression, anxiety and stress, and emotion regulation style.

This study found a series of direct and indirect relationships in which emotion regulation predicts depression and stress, however, changing social network use was able to alleviate both stress and anxiety. By applying a process model of emotion framework, it can be determined that participants were engaging in an altered form of emotion regulation where they began using social networks mindfully, and therefore reduced their potential for negative impacts.

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APPENDICES

APPENDIX A

PRE-TEST

How do people use social media to regulate emotions and wellbeing?

Start of Block: Information Screen

How do people use social media to regulate emotions and wellbeing?

Thank you for considering taking part in this research project. My name is James and I am a Master's student at the University of Waikato. I am looking at how emotional regulation affects social media use, and whether this, in turn, plays a role in mental health and well-being.

What the study involves
As part of the research, you will download a free app called Moment to your smartphone. Over a two-week period, the Moment app will record your social media usage. Once this two-week period is up, you will be able to use Moment to export all the data as an email which you can send to me.

To establish rates of wellbeing, you will be asked to complete a series of short tests, before and after you have recorded your social media use. This will take approximately 30 minutes. This will allow me to see what type of emotion regulation style you prefer and level of emotional wellbeing.

There will be two groups of participants; you will be randomly assigned to one at the end of this survey. The **first group will use social media as normal for two weeks**. **The second group will use social media as normal for one-week, and then for the second week, they will be asked to reduce social media use as much as possible or to 30 minutes per day**. This will allow me to establish any cause and effect relationships.

If you intend the complete the survey, please **press the next arrow until the end**, or the survey will not be completed

Confidentiality
Confidentiality is promised throughout the research and any identifying information will not be published. In order to preserve your confidentiality, you will be asked to create a unique name which you will use throughout the research to link your data. This can take the form of the name of your first pet or first car, as well as the street number of your house, for example, Snowball31 or Swift95. Please write down your unique identifier and keep it in a safe place so that it is not forgotten.

I am only looking at social media. I am not looking at your phone use in general and will not be able to see what you are doing on your phone. I will only be able to see the length of time on certain apps, for example, 30 minutes on Facebook, 20 minutes on Snapchat, etc.

In particular, I am looking at Facebook, Instagram, Snapchat, Twitter, and Tinder.

If at any point during the research and for any reason, you are more than welcome to opt-out without any penalty or consequence, by refusing to answer questions, not sending your social media data, and/or closing the survey screen. However, since you will not have included any identifying information, you will not be able to withdraw after the information has been submitted.

For participating

This research is expected to shine a light on the emerging trends of high social media use and its impact on mental health and wellbeing. **Your participation is very much appreciated, and for participating you will be eligible to go into the draw for a $100 Warehouse voucher.** This will be drawn on the 1st of February and winners will be notified by email. PLEASE NOTE: I can no longer offer course credit. I am very sorry about this.

If you have any questions about the research, please do not hesitate to contact me and ask. **You can reach me at jimschofield22@gmail.com**. You can also contact my supervisor Dr Cate Curtis at cate.curtis@waikato.ac.nz.

This research project has been approved by the Human Research Ethics Committee (Health) at the University of Waikato as HREC(Health)2019#27. Any questions or concerns about the ethical conduct of this research may be sent to the Secretary of the Committee, email humanethics@waikato.ac.nz, postal address, Human Research Ethics Committee (Health), University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

End of Block: Information Screen

Start of Block: Consents

By taking part in this research:

1. I have read the Participant Information Screen and I understand it.
2. I have been given sufficient time to consider whether or not to participate in this study

3. I have been given an opportunity to ask questions about this research and have no further questions at this time
4. I understand that taking part in this study is voluntary (my choice) and that I may withdraw by simply closing the survey screen, or refuse to answer questions, without penalty
5. I have the right to decline to participate in any part of the research activity
6. I know who to contact if I have any further questions about the study in general.
7. I understand that the information supplied by me could be used in future academic publications.
8. I understand that my participation in this study is confidential and that no material, which could identify me personally, will be used in any reports on this study.

Declaration by participant:
By continuing on to the next screen, I am indicating that I agree to the above terms. I am also indicating that I would like to participate in this research project and I understand that I may withdraw by refusing to answer questions and closing the survey screen. If I have any concerns about this project, I may contact the convenor of the Human Research Ethics Committee (Health) at humanethics@waikato.ac.nz

End of Block: Consents

Start of Block: Pre-Test Questionnaire

Q1 Your unique ID (Name of first pet or first car + house number):

_____

Q2 Age

- ○ 16-25
- ○ 26-35
- ○ 36-45
- ○ 46-55
- ○ 56-65
- ○ 66+

Q3 Gender

- ○ Male
- ○ Female
- ○ Gender diverse
- ○ Prefer not to say

Q4 Work Status

- ○ Full-time
- ○ Part-time/Casual
- ○ Unemployed

Q5 Student Status

- ○ Full-time
- ○ Part-time
- ○ Not Studying

Q6 To what extent do you think social media is good or bad for you? (Facebook, Instagram, Snapchat, etc)

- ○ Very Bad
- ○ Bad
- ○ Neutral
- ○ Good
- ○ Very Good

Q6A Comments (Optional)

_____

Q7 To what extent do you think social media is good or bad for Society?

- ○ Very Bad
- ○ Bad
- ○ Neutral
- ○ Good
- ○ Very Good

Q7A Comments (Optional)

_____

End of Block: Pre-Test Questionnaire

Start of Block: DASS

DASS Depression Anxiety Stress Scale – DASS Please read each statement and check a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement. *The rating scale is as follows:* 0 Did not apply to me at all 1 Applied to me to some degree, or some of the time 2 Applied to me to a considerable degree, or a good part of time 3 Applied to me very much, or most of the time

DASS1 I found myself getting upset by quite trivial things

- 0
- 1
- 2
- 3

DASS2 I was aware of dryness of my mouth

- 0
- 1
- 2
- 3

DASS3 I couldn't seem to experience any positive feeling at all

- 0
- 1
- 2
- 3

DASS4 I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)

- 0
- 1
- 2
- 3

DASS5 I just couldn't seem to get going

- 0
- 1
- 2
- 3

DASS6 I tended to over-react to situations

- 0
- 1
- 2
- 3

DASS7 I had a feeling of shakiness (eg, legs going to give way)

- 0
- 1
- 2
- 3

DASS8 I found it difficult to relax

- 0
- 1
- 2
- 3

DASS9 I found myself in situations that made me so anxious I was most relieved when they ended

- 0
- 1
- 2
- 3

DASS10 I felt that I had nothing to look forward to

- 0
- 1
- 2
- 3

X→

DASS11 I found myself getting upset rather easily

- 0
- 1
- 2
- 3

X→

DASS12 I felt that I was using a lot of nervous energy

- 0
- 1
- 2
- 3

X→

DASS13 I felt sad and depressed

- 0
- 1
- 2
- 3

DASS14 I found myself getting impatient when I was delayed in any way (eg, elevators, traffic lights, being kept waiting)

- 0
- 1
- 2
- 3

DASS15 I had a feeling of faintness

- 0
- 1
- 2
- 3

DASS16 I felt that I had lost interest in just about everything

- 0
- 1
- 2
- 3

DASS17 I felt I wasn't worth much as a person

- 0
- 1
- 2
- 3

DASS18 I felt that I was rather touchy

- 0
- 1
- 2
- 3

DASS19 I perspired noticeably (eg, hands sweaty) in the absence of high temperatures or physical exertion

- 0
- 1
- 2
- 3

DASS20 I felt scared without any good reason

- 0
- 1
- 2
- 3

DASS21 I felt that life wasn't worthwhile

- 0
- 1
- 2
- 3

Where to go for help?

http://www.mentalhealth.org.nz for general mental health information
Depression helpline: 0800 111 757
Lifeline: 0800 543 354
Youthline: 0800 376 633
See p.4 of the phonebook for more counselling services.
See p. 46-47 for mental health services provided by the health system

Crisis assessment services (hospital): 0800 50 50 50

End of Block: DASS

Start of Block: Emotion Regulation Questionnaire

ERQ Emotion Regulation Questionnaire. We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways.

ERQ1 **When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about.***

- ○ 1 - Strongly Disagree
- ○ 2
- ○ 3
- ○ 4 - Neutral
- ○ 5
- ○ 6
- ○ 7 - Strongly Agree

ERQ2 **I keep my emotions to myself.**

- ○ 1 - Strongly Disagree
- ○ 2
- ○ 3
- ○ 4 - Neutral
- ○ 5
- ○ 6
- ○ 7 - Strongly Agree

ERQ3 **When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about*.**

- ○ 1 - Strongly Disagree
- ○ 2
- ○ 3
- ○ 4 - Neutral
- ○ 5
- ○ 6
- ○ 7 - Strongly Agree

ERQ4 **When I am feeling *positive* emotions, I am careful not to express them.**

- ○ 1 - Strongly Disagree
- ○ 2
- ○ 3
- ○ 4 - Neutral
- ○ 5
- ○ 6
- ○ 7 - Strongly Agree

ERQ5 **When I'm faced with a stressful situation, I make myself *think about it* in a way that helps me stay calm.**

- ○ 1 - Strongly Disagree
- ○ 2
- ○ 3
- ○ 4 - Neutral
- ○ 5
- ○ 6
- ○ 7 - Strongly Agree

ERQ6 **I control my emotions by *not expressing them*.**

- ○ 1 - Strongly Disagree
- ○ 2
- ○ 3
- ○ 4 - Neutral
- ○ 5
- ○ 6
- ○ 7 - Strongly Agree

ERQ7 **When I want to feel more *positive* emotion, I *change the way I'm thinking* about the situation.**

- ○ 1 - Strongly Disagree
- ○ 2
- ○ 3
- ○ 4 - Neutral
- ○ 5
- ○ 6
- ○ 7 - Strongly Agree

ERQ8 **I control my emotions by *changing the way I think* about the situation I'm in.**

- ○ 1 - Strongly Disagree
- ○ 2
- ○ 3
- ○ 4 - Neutral
- ○ 5
- ○ 6
- ○ 7 - Strongly Agree

ERQ9 **When I am feeling *negative* emotions, I make sure not to express them.**

- ○ 1 - Strongly Disagree
- ○ 2
- ○ 3
- ○ 4 - Neutral
- ○ 5
- ○ 6
- ○ 7 - Strongly Agree

ERQ10 **When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation.**

- 1 - Strongly Disagree
- 2
- 3
- 4 - Neutral
- 5
- 6
- 7 - Strongly Agree

End of Block: Emotion Regulation Questionnaire

Start of Block: Moment Guide

Q77 Moment Installation Guide

Moment Installation Guide

Thank you for agreeing to take part in this research. In this guide, I will show you how to easily download the Moment app.

1) First, you are to find the Moment app on the app store of your phone by simply searching "Moment" in the search bar, selecting Moment, and pressing download. You can also download from here if you are on iOS and from here if you are on Android. This app is free and uses 86.1 MB of phone storage on iOS and 31 MB of phone storage on Android.

2) Next, follow the instructions when it has finished downloading to get it set up. This includes turning notifications and location services on. You also want to make sure the "Track Screen Time" option is also checked.

3) Next you want to make sure the 'screen time detection' and the 'app use detection' options are on.

4) In the 'App Use Detection' screen, you need to go to 'Schedule' and press the 'Every Day' option.

5) In the 'Insights' screen, choose 'Never' under the 'Notify Me' option.

6) In the 'Goals' screen, select 'Pickups' and check the 'I Have a Pickup Goal' option to turn this off. Do the same in 'Screen time' to turn the 'I Have a Screen Time Goal' option off too.

The Moment app has now been installed and is ready to use. Follow the instructions in-app now to make sure you are correctly recording the amount of time spent using apps.

FOR ANDROID USERS: Moment is able to automatically detect your app data. There is nothing more you need to do.

FOR APPLE USERS: There is an added step that Moment requires in order to read your app usage. This involves taking a screenshot of your 'Battery' information every 10 days. Detailed information on this process will be provided. This step takes an extra 30 seconds per every 10 days.

1. Go to your **Settings app > Battery**. You can also simply tap on the notification to open the Moment section of the settings app, which will get you to close.
2. Tap **Show Activity** on the right side to show each app's usage.
3. Tap **Last 10 Days** to display last week's usages.
4. **Scroll down** until the Last 24 Hours row is at the top of the screen to fit in more apps.
5. **Take a screenshot** by pressing your phone's power and volume up buttons at the same time (or the power and home buttons).
6. If all the apps don't fit, **scroll down to show the rest**, and take a second (or third) screenshot.

Moment will take it from there. The app will verify that your screenshot is correct and upload it securely to Moment servers for processing. From there, the screenshot will be parsed and your app usage from the past 10 days will be sent back to you in a few minutes.

Further information can be found through the app, as well as on the Moment website at https://inthemoment.io/.

End of Block: Moment Guide

Start of Block: Control group

Q73 You have been randomly selected to go into the control group. Please use your social media as normal for the next two weeks.

In the next screen, I will ask for your email address. This screen is separate from the rest of the survey and will not be linked to your answers.

End of Block: Control group

Start of Block: Experimental group

Q74 You have been randomly selected to go into the experimental group. Please use your social media as normal for the next week, and then reduce its use as much as possible for the next week.

When reducing social media usage, please try to keep it to less than 30 minutes a day. Remember I am only looking at Facebook, Instagram, Snapchat, Twitter and Tinder.

In the next screen, I will ask for your email address. This screen is separate from the rest of the survey and will not be linked to your answers.

End of Block: Experimental group

APPENDIX B

E-mail Collection – experimental

Start of Block: E-mail Address

Q1 Thank you for completing the pre-test. I would like you to now enter your email address so that I can send you an email in one week to let you know when to start reducing your social media use, and another email in two weeks with a link for the post-test.

The email address you provide will not be linked in any way to the answers you have provided.

_____

Q5 Please select whether you would like to go into the draw for the $100 Warehouse voucher or receive course marks as a student in an approved paper.

- ○ I would like to go into the draw
- ○ I would like course marks

End of Block: E-mail Address

APPENDIX C

E-mail Collection - control

Start of Block: E-mail Address

Q1 Thank you for completing the pre-test. I would like you to now enter your email address so that I can send you an email in two weeks with a link for the post-test.

The email address you provide will not be linked in any way to the answers you have provided.

_____

Q6 Please select whether you would like to go into the draw for the $100 Warehouse voucher or receive course marks as a student in an approved paper.

Please note, course marks are no longer available.

- ○ I would like to go into the draw
- ○ I would like course marks

End of Block: E-mail Address

APPENDIX D

POST-TEST

How do people use social media to regulate emotions and wellbeing?

Start of Block: Moment Guide

Post-test

Moment Data Exporting

Thank you again for taking part in this research. Here is just a reminder on how to export the data you have collected through the app.

To export the data after 14 days of using the app, please follow these instructions:

1) Open Moment and go to the 'Settings' page, and then 'Advanced'.

2) Choose the 'Export Data' option. This will bring up an email screen where you can send the data Moment has collected. Please enter my email address which is jimschofield22@gmail.com, and please put your unique identifier in the subject title (Name of first pet or first car + street number, e.g. Snowball31). This data will only include the length of time spent on certain apps. I will not be able to see what you were using the apps for, what time of day you were using the apps, and how the apps were being used. You may look at the data and can always opt out of sending it.

3) You are all done. Now complete the final post-test and please feel free to contact me if you have any concerns or queries.

End of Block: Moment Guide

Start of Block: Post-Test Questionnaire

Q1 Your unique ID (Name of first pet or first car + house number, e.g. Snowball31):

_____

Q2 Age

- ○ 16-25
- ○ 26-35
- ○ 36-45
- ○ 46-55
- ○ 56-65
- ○ 66+

Q3 Gender

- ○ Male
- ○ Female
- ○ Gender diverse
- ○ Prefer not to say

Q4 Work Status

- ○ Full-time
- ○ Part-time/Casual
- ○ Unemployed

Q5 Student Status

- ○ Full-time
- ○ Part-time
- ○ Not Studying

Q6 To what extent do you think social media is good or bad for you? (Facebook, Instagram, Snapchat, etc)

- ○ Very Bad
- ○ Bad
- ○ Neutral
- ○ Good
- ○ Very Good

Q6A Comments (Optional)

_____

Q7 To what extent do you think social media is good or bad for Society?

- ○ Very Bad
- ○ Bad
- ○ Neutral
- ○ Good
- ○ Very Good

Q7A Comments (Optional)

_____

Q73 Are your screen time averages higher or lower than what you expected?

- ○ Much lower
- ○ Slightly lower
- ○ About the same
- ○ Slightly higher
- ○ Much higher

Q75 Comments (Optional)

_____

Q76 Are you likely to continue using social media at your previous level?

- ○ Yes
- ○ No
- ○ Unsure

Q77 Comments (Optional)

_____

Q74 Have you encountered any stressful events while taking part in this research?

- ○ Yes
- ○ No

Q78 Comments (Optional)

_____

End of Block: Post-Test Questionnaire

Start of Block: DASS

Depression Anxiety Stress Scale – DASS
Please read each statement and check a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:
0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

DASS1 I found myself getting upset by quite trivial things

- 0
- 1
- 2
- 3

DASS2 I was aware of dryness of my mouth

- 0
- 1
- 2
- 3

DASS3 I couldn't seem to experience any positive feeling at all

- 0
- 1
- 2
- 3

DASS4 I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)

- 0
- 1
- 2
- 3

DASS5 I just couldn't seem to get going

- 0
- 1
- 2
- 3

DASS6 I tended to over-react to situations

- ○ 0
- ○ 1
- ○ 2
- ○ 3

X→

DASS7 I had a feeling of shakiness (eg, legs going to give way)

- ○ 0
- ○ 1
- ○ 2
- ○ 3

X→

DASS8 I found it difficult to relax

- ○ 0
- ○ 1
- ○ 2
- ○ 3

X→

DASS9 I found myself in situations that made me so anxious I was most relieved when they ended

- ○ 0
- ○ 1
- ○ 2
- ○ 3

X→

DASS10 I felt that I had nothing to look forward to

- ○ 0
- ○ 1
- ○ 2
- ○ 3

X→

DASS11 I found myself getting upset rather easily

- ○ 0
- ○ 1
- ○ 2
- ○ 3

X→

DASS12 I felt that I was using a lot of nervous energy

- 0
- 1
- 2
- 3

DASS13 I felt sad and depressed

- 0
- 1
- 2
- 3

DASS14 I found myself getting impatient when I was delayed in any way (eg, elevators, traffic lights, being kept waiting)

- 0
- 1
- 2
- 3

DASS15 I had a feeling of faintness

- 0
- 1
- 2
- 3

X→

DASS16 I felt that I had lost interest in just about everything

- 0
- 1
- 2
- 3

X→

DASS17 I felt I wasn't worth much as a person

- 0
- 1
- 2
- 3

X→

DASS18 I felt that I was rather touchy

- 0
- 1
- 2
- 3

DASS19 I perspired noticeably (eg, hands sweaty) in the absence of high temperatures or physical exertion

- 0
- 1
- 2
- 3

DASS20 I felt scared without any good reason

- 0
- 1
- 2
- 3

DASS21 I felt that life wasn't worthwhile

- ○ 0
- ○ 1
- ○ 2
- ○ 3

Where to go for help?

http://www.mentalhealth.org.nz for general mental health information
Depression helpline: 0800 111 757
Lifeline: 0800 543 354
Youthline: 0800 376 633
See p.4 of the phonebook for more counselling services.
See p. 46-47 for mental health services provided by the health system
Crisis assessment services (hospital): 0800 50 50 50

End of Block: DASS

Start of Block: Concluding statement

Q123 Thank you for taking part in this research. This will go a long way towards understanding the effects of social media on health.

Please remember to export your Moment data to my email at jimschofield22@gmail.com. Remember to include your unique identifier in the subject line.

In the next screen, you will be given a chance to enter your details to go into the draw for a $100 Warehouse voucher.

End of Block: Concluding statement

APPENDIX E

Email Reminder

To the Participant of this study,

I would like to thank you again for taking part in this research. This is just a friendly reminder that the *Moment* app can be downloaded from here if you are on iOS and from here if you are on Android. The app is easy to download and use, and only takes a couple of minutes to set up. I have attached a copy of the Moment installation guide as there are options in the app that are on by default but can be turned off as they are not necessary.

If you are an Apple user, please be aware that there is an extra step that is needed to record the data. This only takes an extra 15 seconds and is detailed in the installation guide attached.

I would also like to remind you to please use the name you created in your first survey in all future surveys. This allows me to link the data together without giving away any identifying information about yourself. This was either the name of your first pet or your first car and your house number, for example, Snowball31.

If you have any questions or comments please do not hesitate to email me, or text/call at 0278177780. As a final reminder, your participation is completely voluntary and if for any reason at any time you would like to withdraw, you may simply just stop using the app, not send in the data or not complete the second survey. You will not receive any penalties and will still receive your course credit (if eligible) or go into the draw to win a $100 Warehouse voucher.

If you were assigned to the control group, then you can continue as normal. If you were in the experimental group, remember to cut your social media use down to 30min in the second week. The easiest way to remember when this starts is to set a date on your calendar 7 days from when you started.

When you are ready to complete the post-test after 14 days and send your data in, please go to this link here

Kind regards,
James Schofield

APPENDIX F

Second email reminder

Hello, I would just like to thank you again for taking part in my research "How do people use social media to regulate emotions and wellbeing?"

To those who completed the post-test, thank you and well done. This wasn't the easiest of experiments, and a reevaluation of your own social media usage can be sobering for some!

To those who have not yet completed the post-test, it is not too late. Even if you have not been tracking your app usage, completing the post-test anyway is still super helpful and provides tons of valuable data! It also makes it much easier to allocate course credit and make sure you receive your compensation.

To get to the post-test if you have not already found it, you can reach it through the link below. This post-test is much shorter than the first test, and you should be able to complete it in just a few minutes.

Thank you again for your participation, and if there are any concerns or queries please contact me.

Kind regards

James Schofield

APPENDIX G

Recruitment Flyer

APPENDIX H

Moment Installation Guide

Moment Installation Guide

Thank you for agreeing to take part in this research. In this guide, I will show you how to easily download the *Moment* app.

1) First, you are to find the Moment app on the app store of your phone by simply searching "Moment" in the search bar, selecting Moment, and pressing download. You can also download from here if you are on iOS and from here if you are on Android. This app is free and uses 86.1 MB of phone storage on iOS and 31 MB of phone storage on Android.

2) Next, follow the instructions when it has finished downloading to get it set up. This includes turning notifications and location services on. You also want to make sure the "Track Screen Time" option is also checked.

3) Next you want to make sure the 'screen time detection' and the 'app use detection' options are on.

4) In the 'App Use Detection' screen, you need to go to 'Schedule' and press the 'Every Day' option.

5) In the 'Insights' screen, choose 'Never' under the 'Notify Me' option.

6) In the 'Goals' screen, select 'Pickups' and check the 'I Have a Pickup Goal' option to turn this off. Do the same in 'Screen time' to turn the 'I Have a Screen Time Goal' option off too.

The Moment app has now been installed and is ready to use. Follow the instructions in-app now to make sure you are correctly recording the amount of time spent using apps.

FOR ANDROID USERS: Moment is able to automatically detect your app data. There is nothing more you need to do.

FOR APPLE USERS: There is an added step that Moment requires in order to read your app usage. This involves taking a screenshot of your 'Battery' information every 10 days. Detailed information on this process will be provided. This step takes an extra 30 seconds per every 10 days.

1. Go to your **Settings app > Battery**. You can also simply tap on the notification to open the Moment section of the settings app, which will get you to close.
2. Tap **Show Activity** on the right side to show each app's usage.
3. Tap **Last 10 Days** to display last week's usages.
4. **Scroll down** until the *Last 24 Hours* row is at the top of the screen to fit in more apps.
5. **Take a screenshot** by pressing your phone's power and volume up buttons at the same time (or the power and home buttons).
6. If all the apps don't fit, **scroll down to show the rest**, and take a second (or third) screenshot.

Moment will take it from there. The app will verify that your screenshot is correct and upload it securely to Moment servers for processing. From there, the screenshot will be parsed and your app usage from the past 10 days will be sent back to you in a few minutes.

Further information can be found through the app, as well as on the Moment website at https://inthemoment.io/.

APPENDIX I

Information Sheet

Hello and thank you for considering taking part in this research project. My name is James Schofield and I am a master's student at the University of Waikato. For my thesis this year, I am looking at how emotional regulation affects social media use, and whether this, in turn, plays a role in mental health and well-being. Dr Cate Curtis will be supervising this research project.

As part of the research, you would download a free app called *Moment* to your smartphone. Easy to download and use, this app simply records the amount of time you spend using specific apps each day. In particular, I will be looking at the usage of the most commonly used social media platforms – Facebook, Snapchat, Instagram, Tinder, and Twitter. So, if you spend 44 minutes on a particular day using Facebook, for example, this app will be able to show that information. Over a two-week period, the *Moment* app will record your social media usage. Once this two-week period is up, you will be able to use *Moment* to export all the data as an email which you can send to me. I am only looking at social media use, so don't worry about the other apps you might be using. To be clear, I am only looking at the social media apps mentioned above. I am not looking at other apps you may be using, and I will not be able to see how you are using them, so your privacy is maintained.

To establish rates of wellbeing, you will be asked to complete a series of short tests, before and after you have recorded your social media use. This will take approximately 30 minutes. This will allow me to see what type of emotion regulation style you prefer and level of emotional wellbeing. There will be two groups of participants; you will be randomly assigned to one at the end of this survey. The first group will use social media as normal for two-weeks. The second group will use social media as normal for one-week, and then for the second week they will be asked to reduce social media use as much as possible. This will allow me to establish any cause and effect relationships. That is, there are three steps to this research:

1. A brief online questionnaire consisting of three tests about emotion
2. Recording your social media use for two weeks, using *Moment*, and emailing your data

3. Repeating the online questionnaire with a few additional questions about your experiences of the research.

Confidentiality is promised throughout the research and any identifying information will not be published. However, if at any point during the research and for any reason, you are more than welcome to opt out of part or all of it, or to withdraw without any penalty or consequence. To withdraw, all you need to do is simply stop using the app, not complete the pre or post-test, or not submit the data. In order to preserve your confidentiality, you will be asked to create a unique name which you will use throughout the research to link your data in the three stages above. This can take the form of the name of your first pet or first car, as well as the street number of your house, for example, Snowball31 or Swift95. Please write down your unique identifier and keep it in a safe place so that it is not forgotten.

Regarding the Terms of Service and Privacy Policy on the *Moment* app, there is nothing that would be of cause for concern. While using the app, the *Moment* company collects data for legitimate purposes such as for app support, delivering better experiences for customers, complying with legal obligations, to authenticate you as a user, and ensuring the safety and security of users. You own all information, and data collection by *Moment* stops as soon as you uninstall the app. All data collection by *Moment* is anonymous and is transferred securely. All of this information can be seen on the Privacy Policy on the app or company website at https://inthemoment.io/privacy.

This research is expected to shine a light on the emerging trends of high social media use and its impact on mental health and wellbeing. Your participation is very much appreciated, and if applicable you will be compensated with a 1% course mark for taking part, if a student is in an approved Psychology course, such as PSYCH100. Students who are not enrolled in an approved Psychology course will be eligible to go into the draw to win a $100 Warehouse voucher.

If you have any questions about the research, please do not hesitate to contact me and ask. You can reach me at jimschofield22@gmail.com, and you can call/text on 0278177780. You can also contact my supervisor Dr. Cate Curtis at cate.curtis@waikato.ac.nz.

If you're ready to take part in the research, you can access the survey by clicking this link: https://waikato.qualtrics.com/jfe/form/SV_0UNVX49oHPYsidD

This research project has been approved by the Human Research Ethics Committee (Health) at the University of Waikato as HREC(Health)2019#27. Any questions or concerns about the ethical conduct of this research may be sent to the Secretary of the Committee, email humanethics@waikato.ac.nz, postal address, Human Research Ethics Committee (Health), University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

APPENDIX J

Research Ethics Application

Research Ethics Application

Human Research Ethics Committee
Postal Address: The Secretary, Human Research Ethics Committee
Private Bag 3105
Hamilton 3240
E-mail: humanethics@waikato.ac.nz

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

Before applying for approval applicants must familiarise themselves with the Ethical Conduct in Human Research and Related Activities Regulations in the University Calendar http://calendar.waikato.ac.nz/assessment/ethicalConduct.html.

Use this application if your research project involves the collection, use, and/or reuse of human data. This form is to be completed by staff and students doing research **prior to** the collection of any data from human participants.

Upon completion of this form please submit to/or email to your Faculty/School Human Research Ethics Committee [HREC]. Health Research and Health, Sport & Human Performance applications should be submitted to the central HREC (humanethics@waikato.ac.nz).

Note 1: This application has been formatted as a series of tables to enhance stability. Please type your responses to questions in the cells beside or below the prompts. The table will expand to accommodate the length of your responses. At times, tables in word do not display correctly onscreen, although the underlying formatting is stable and the file will print to hard copy or pdf correctly. To fix this problem, position the cursor in an empty cell, and press enter or tab. This should fix the display. You can then delete the formatting you have added and continue.

Note 2: Use the file naming convention 2019_Surname_HRECApplication (e.g. **2019_Smith_HRECApplication**). When you submit your application, we would prefer a single pdf file including all documents associated with the application, in the order you intend us to read them. If you have difficulty combining files, please number your files in the order that you intend us to read them (e.g. **2019_Smith_HRECApplication01, 2019_Smith_HRECApplication02**, etc.)

Checklist

A positive answer to one or more of the questions below indicates the need for review by the University of Waikato Human Research Ethics Committee (Health), which is accredited by the Health Research Council. Health Applications should be submitted by email to humanethics@waikato.ac.nz.

y	Are you investigating a topic that concerns health, disability or well-being?
y	Are you using an instrument intended to assess health, disability or well-being?
n	Is referral to a health service provider anticipated as a potential outcome of participation?
n	Are participants being recruited in their capacity as DHB employees?
n	Is the researcher intending to collect tissue samples (e.g. bloods, saliva, urine) from healthy individuals?

n Is the researcher intending to utilize interventions related to exercise and nutrition?

Submit this application form when the checklist and the Application Cover Sheet is complete and has been signed.

y	Personal details (on Application Cover Sheet)	y	Academic Details (on Cover Sheet)
y	Information Sheet (attached)	n	Signatures (where required)
y	Consent Form (attached)	y	Research Instruments (attached)

Research Ethics Application – Cover Sheet

Human Research Ethics Committee
Postal Address: The Secretary, Human Research Ethics Committee
Private Bag 3105
Hamilton 3240
E-mail: humanethics@waikato.ac.nz

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

Name of Principal Investigator:	James Schofield
School / Faculty / Institute:	School of Psychology, Faculty of Arts and Social Science
Email address:	jimschofield22@gmail.com
Phone number:	0278177780
Office:	
Student ID (if applicable):	1070586
Proposed start date of field research / data collection:	20/4/2019
This is an application for approval of: (indicate all that apply)	N Staff research project N PhD Research Y Masters Research N Other
Name of degree / paper (if applicable):	Master of Social Science (Psychology)
Supervisor's name (if applicable):	Cate Curtis
Supervisor's approval (signature):	
Funding sources:	No funding
Project sponsors (e.g. equipment sponsors):	
Research locations (if not within University of Waikato facilities)	University of Waikato – Hamilton Campus
Associated Applications (provide the associated application code and title):	

I request approval for this research or related activity and attach all relevant documentation necessary for evaluation under the Ethical Conduct in Human Research and Related Activities Regulations.
http://calendar.waikato.ac.nz/assessment/ethicalConduct.html

I have read and complied with the University's Ethical Conduct in Human Research and Related Activities Regulations.

Principal Investigator's signature: 

Date: 28/03/19

Project Overview

Please provide us with basic information about your project.

1. Project Title:

   How do people use social media to regulate emotions and wellbeing?

2. Briefly state the **research topic, research questions** and/or **research objectives**.

   To investigate whether social media usage is linked to a person's emotion regulation style and if wellbeing is affected by decreased use.

3. What specific research activities are you planning to undertake? Respond to this question with a list of research activities. You will be asked to provide further details under Q.18.
   e.g. semi-structured interviews of 12 FASS academic staff members about their experiences of xxx
   e.g. anonymous online survey of all University of Waikato staff members about xxx
   ...
   - A pre-test of all participants which will consist of the Depression Anxiety Stress Scale, and the Emotional Regulation Questionnaire.
   - All participants will be required to download the *Moment* app onto their iOS or Android smartphones. This free app records the screen time and application (app) usage of users and provides raw data for analysis.
   - The participants will be split into two groups. The control group will continue to use social media as usual for 14 days. The experimental group will use social media as normal for 7 days, and then will reduce their social media usage for the final 7 days.
   - All participants will send their phone (*Moment*) data to the principal researcher. This data will then be analysed with the participants' scores of wellbeing and emotion regulation style.
   - A post-test of all participants which will consist of the Depression Anxiety Stress Scale.
   - A questionnaire given to all participants in the post-test to provide more context about their social media use and their activity during the research period.

4. To justify your project, provide a summary of the research, its methods, anticipated academic benefits, value and/or contribution to the field.

   As young people have increased their use of social media over the past decade, so too have rates of mental health problems among this group, such as depression, anxiety, and rates of suicide (Rideout & Fox, 2018). Links have been established in research between emotion regulation style and wellbeing, and level of smartphone addiction, internet use, and internet gaming and gambling (Twenge, Joiner, Rogers, & Martin, 2018). As social media has evolved to become an integral part of the lives of the people of New Zealand, there remains relatively little and inconsistent research on appropriate levels of time spent on social media sites (Vehedi & Zannella, 2019). Using methods to track social media usage each day and by

establishing preferred emotion regulation styles of participants, this research will examine the link between social media use and emotion regulation style, namely the emotion regulation methods of cognitive reappraisal and expressive suppression (John & Gross, 2004). I will also be examining whether time spent on social media has an effect on mental health and wellbeing. By having an experimental and control group, I will then change the independent variable of time spent on social media for one group by lowering their use. This will allow me to determine whether social media use has a causal relationship with mental health. My hypothesis based on prior research (Brooks, 2015; Elhai, Hall, & Erwin, 2018; Rideout & Fox, 2018; Vahedi & Zannella, 2019), is that spending less time on social media will improve the mental health and wellbeing of participants. Therefore, it is expected that participants in the experimental group will have reduced depression and anxiety. It is important to gather base rates of mental health before research commences, and immediately following. I will be using two common and well-validated measures of depression and anxiety. I am looking for participants that represent typical New Zealand university students, so it is not expected (though not impossible) that participants will reach clinical levels of depression or anxiety.

This research has important implications for New Zealand and will firmly establish the link between social media use and mental health and wellbeing. As this is a developing field, and the links are not clear yet, this research has potential to be useful in establishing safe levels of social media use for those groups who are most at risk.

References:

Brooks, S. (2015). Does personal social media usage affect efficiency and well-being? *Computers in Human Behaviour, 46,* 26-37.

Elhai, J. D., Hall, B. J., & Erwin, M. C. (2018). Emotion regulation's relationships with depression, anxiety and stress due to imagined smartphone and social media loss. *Psychiatry Research, 261,* 28-34.

John, O. P., & Gross, J. J. (2004). Healthy and unhealthy emotion regulation: Personality processes, individual differences and life span development. *Journal of Personality, 72*(6), 1301-1334.

Rideout, V., & Fox, S. (2018). *Digital health practices, social media use, and mental well-being among teens and young adults in the U.S.* (Hopelab report). Chicago, IL: Hopelab. Retrieved from https://www.hopelab.org/reports/pdf/a-national-survey-by-hopelab-and-well-being-trust-2018.pdf

Twenge, J. M., Joiner, T. E., Rogers, M. L., & Martin, G. N. (2018). Increases in depressive symptoms, suicide-related outcomes, and suicide rates among U.S. adolescents after 2010 and links to increased new media screen time. *Clinical Psychological Science, 6*(1), 3-17.

Vahedi, J., & Zannella, L. (2019). The association between self-reported depressive symptoms and the use of social networking sites (SNS): A meta-analysis. Current Psychology, 1-16.

The Researcher(s)

Please tell us about your research team.

5. List all members of the research team and briefly describe their roles within the research project.

I, James Schofield, will be the principal researcher undertaking this project as part of my Masters Thesis. I will be recruiting and instructing the participants, collecting and interpreting

the data, and completing the write-up. Dr Cate Curtis will be the lead supervisor for this project and will assist in the planning of the project, time management and ensuring a high standard of quality.

6. Outline your qualifications to undertake this research. Include such things as prior experience, training in relevant research methods, and/or personal knowledge of the subject.

I have completed my Bachelor Degree in Social Science (Psychology) and my Post-graduate Diploma in Social Science (Psychology) with Distinction at the University of Waikato. During these studies, I completed a wide range of papers relating to research methods, data collection and analysis, social and clinical psychology, and culturally appropriate research methodology within New Zealand. I achieved high grades within my papers and am able to apply them effectively in practical situations. I am also currently employed at Emerge Aotearoa as a support worker for vulnerable youth. I also work as a Teacher's Assistant for the PSYC338 Abnormal Psychology class at the University of Waikato. The combination of these roles have given me experience in applying my psychological knowledge in practical situations.

7. What, if any, discipline-specific codes of ethics or professional standards will guide your research?

The APA guidelines for Ethical Research and the New Zealand Psychological Society Code of Ethics. The Te Ara Tika guidelines for Māori research ethics will also be consulted.

The Participants

Please provide the following information about your potential participants:

8. Broadly, who will your participants be? (Indicate the population, not the names of participants) How many participants will there be? Provide an estimate if you are unsure of exact numbers.

I will be primarily recruiting students from the University of Waikato as my participants. There may be other participants who may volunteer in the research. The majority are expected to be first year Arts and Social Science students, as they will be the primary audience the project will be advertised to. Students from other faculties will be welcome to participate in the research, as well as non-students and visitors to the University. People who are currently undergoing emotional difficulties will be discouraged from volunteering (See appendix 1). I will be seeking an estimated 20 participants to complete the research. The only requirement is that they currently use social media platforms and they have smartphone devices capable of using social media apps and the *Moment* app (iOS 11.2 or later, or Android 5.0 and up).

9. How will you recruit participants? Summarise your process.

The Psychology Research Experience Programme, which provides first-year psychology students with course credits for participating in research, will be utilised. The project will also be advertised through flyers spread throughout the University of Waikato Hamilton campus (See appendix 1). The project will also be advertised through course Moodle emailing lists.

10. How will you inform them about the project and their part in it? Summarise your process.

All participants will be informed about the project through recruitment flyers, Moodle messages, the information sheet and in direct correspondence with the principal

researcher. All participants will be given an opportunity to ask any questions they might have and my email will be made available for any extra queries. They will be made fully aware of the research methods, role they play, intended output for the research and implications of the research. All information will be provided to participants before research starts.

Attach *a copy of the information sheets for participants. Ensure that the content of the information sheet is written in language suited to the relevant participants.*

See Appendix 2.

Attach *a copy of any recruitment emails, posts, posters or similar.*

See Appendix 1.

11. Are the participants vulnerable?

They are expected to be representative of University of Waikato students and an attempt will be made to discourage vulnerable people from volunteering (see appendix 1).

If yes, then: N/A
In what ways are they vulnerable? N/A
Why do you need to involve them in your research? N/A
How will you protect them from harm? N/A

12. Will you select participants on the basis of their ethnicity, iwi, culture, gender, sexuality, religion, ethical belief or disability?

No, participants from all backgrounds and beliefs will be accepted.

If yes, then specify the basis for selection, and state how you will tell participants about the selection criteria.

N/A

Are your participants likely to be from a particular ethnic group or other distinct population even if you are not selecting them on that basis?

According to the 2017 Annual Report of the University of Waikato, 23% of students identify as Māori, and 11.8% are international students. My participant demographics are expected to largely reflect these statistics.

What cultural and other competencies do you have to work with your selected participant group (e.g. language, membership, professional training)?

Particular cultural competencies will not be necessary as participants will not be chosen based on cultural groups. The research will be conducted through online questionnaires instruments (DASS) that are validated across a wide range of cultures, including New Zealand Maori.

13. Do you have any type of relationship with your participants already (e.g. employer/employee, supervisor/worker, personal relationship)?

I do not expect to have a prior relationship with the participants. As I work as a tutor in PSYC338, I will encourage participants of that class to not volunteer (see appendix 1).

If yes, then you will have a dual role in the research, both as researcher and, for example, as friend or family member. How will your pre-existing relationship affect your role as a researcher?

N/A

Consider potential ethical issues associated with your pre-existing relationship. How will you address these issues in your project?

N/A

14. Will participants receive any form of compensation or incentive for participation? (See guidelines on compensation, and note that reimbursement for travel expenses can be stated, but does not need justification.)

Yes.

If yes, what will they receive? (e.g. vouchers, prizes, shared refreshments, course credits etc.)

Some participants will receive course credit for taking part in the research. Participants not eligible for course credit will instead go into the draw to win a $100 voucher (voucher to be established according to University of Waikato voucher guidelines).

Consent

Please provide the following information about consent processes:

15. How will you gain informed consent from your participants?

The consent form which is appended will be include as the second screen of the online survey.

Who will gain consent from participants? Note that where dual roles exist (Q.13 above), coercion to participate may be avoided by asking a third party to undertake the informed consent process.

By continuing on to take the survey, participants are indicating that they consent to the research.

When will participants give their consent?

During the initial phase of research when first commencing the survey.

How will you record their consent?

By their completion of the surveys.

***Attach** a copy of the consent forms for participants. If you intend to seek oral consent, include a procedure sheet to describe the process by which consent will be negotiated.*

See Appendix 3.

If vulnerable, are your participants able to give informed consent?

N/A (Participants are not expected to be especially vulnerable.)

If no, then:

How will you obtain consent from their proxy?

What steps will you take to ensure that their participation is voluntary at all times?

N/A.

16. With the exception of participants who are anonymous to the researcher, participants have the right to withdraw entirely or in part from the research. Please provide the following information:

How long will participants have to withdraw? (e.g. three weeks after data collection, or receipt of a transcript)

Due to data being anonymous, data will not be able to be withdrawn after it is submitted.

How will they withdraw? (e.g. by informing the researcher)

They can refuse any questions and will be able to stop completing the surveys and close the programme. They can also opt out of sending their Moment social media data.

17. Data collection activities may be planned for off-campus locations. Please list all off-campus location where you will engage in data collection.

All data collection will be performed from participants' own computers at a location of their own choosing.

Do you need consent or permission from any organisation, community representative, and/or anyone other than the individual participants? If yes, list all the required permissions, consents, and/or approvals.

N/A

How and when will you gain these permissions, consents and/or approvals?

N/A

Attach *any statements, letters, or emails of permission or approval that have been secured in advance of your application to the Human Research Ethics Committee.*

Research design

Please tell us about what you will be asking your participants to do.

18. What will participants be doing and how long will each activity take? Please provide these details for each of the items on your list in Q.3 above.

After expressing interest in participating, participants will be provided with an information sheet which will include a link to the online pre-test survey, with a reiteration of key information about the research, rights as a participant, and instructions on downloading the Moment app onto their phone. Participants will be asked to create a unique identifier to use when completing the pre- and post-test surveys, and sending the social media usage data. This will allow me to link the data together without giving away any identifying information. This identifier will be used to link their data with their survey scores. The pre-test will consist of the Depression Anxiety Stress Scale and the Emotional Regulation Questionnaire. Following the pre-test, participants will be instructed to download the Moment app. Moment is a free app that records the screen time and application (app) usage of smartphone users and provides raw data for analysis. Data collected is non-invasive and reserves the privacy of its users. The final screen will assign the participants randomly into either the experimental and control group. In a separate screen the participants will be able to provide their email. It will be made clear to participants that the email address is not linked to their data and will be used for questions/answers, reminders and entering the voucher draw. This will take approximately 30 minutes.

The participants will be randomly split into two groups of the same size, via the survey software programme, upon completion of the pre-test. The control group will continue to use social media as usual for 14 days. The experimental group will use social media as normal for 7 days, and then will reduce their social media usage for the final 7 days. During this time they will be required to follow the instructions of the Moment app, which requires users to take a screenshot of their battery usage daily. The app only needs the screenshot to analyse battery usage and screen time. The screenshot can then be deleted. The only

time involved will be that used to download and use the app and send the data: approximately 10 minutes in total.

The day after participants complete the pre-test, they will be sent an email with friendly reminders on how to download/use the Moment app correctly, have an opportunity to ask the researcher any questions, a reminder that participating is voluntary and that if they were to withdraw, they are still eligible for course credit (if applicable) and the voucher draw. They will also be directed to student health and counselling services if they feel like there is any negative impact on themselves.

At the conclusion of the research, a post-test which will consist of the Depression Anxiety Stress Scale will be given to all participants. A questionnaire will also be given to all participants to provide more context about their social media use and their activity during the research period. This will approximately take 30 minutes.

Attach *all research instruments that you intend to use to collect data. (e.g. interview schedules, questionnaire/survey items). Indicate whether the research instruments are drafts or final versions. The final versions of research instruments must be lodged with the committee prior to data collection.*

See Appendix 5.

How will participants benefit from their involvement in the research?

The participants will gain a greater understanding of their smartphone and social media use, and how it relates to their well-being.

19. Could participants be harmed in your research?

There is very little, if any, risk that participants will be harmed during the research.

If yes, please describe all potential harms to your participants.

Although unlikely, it is theoretically possible that participants who reduce their social media use will experience a decrease in their emotional well-being. However, we expect the reverse to be the case.

How will you minimize the risk of these harms occurring?

Participants will be informed of the nature and purpose of the research and may simply opt not to volunteer if they suspect that participation may have negative impacts on them. In the unlikely event that participants experience discomfort as a result of this research, they may withdraw at any time without penalty.

What will you do if a participant is harmed? Describe your processes in detail.

it is unlikely that participants will be harmed, but information on this is included above.

Is it likely that concerns could arise regarding the health and wellbeing of your participants, through their participation in your project? How will this be managed?

Please see above.

20. How will you analyse the data that you collect from your participants?

Data will be analysed through computer programmes such as excel and SPSS and the appropriate statistical tests.

Will your research involve comparing one group to another?

Yes, it will involve comparing a control group to an experimental group.

If yes, then explain how the comparison will be done.

Through a regression analysis of the data.

How are the participants categorized into specific groups?

By random selection.

Why is it important to do this?

This is important to establish a cause and effect relationship.

21. Does your research involve any deception of participants?

No, they will not be deceived in any way

If yes, then describe the deception.

N/A

Why is it necessary to deceive participants? How and when will participants be told of the deception?

N/A

22. Will the true identity of the researcher(s) be concealed from participants at any time during the researcher? (Such research is called 'covert research'.)

No, I will be completely open about my identity during the research.

If yes, then describe the concealment.

N/A

Why is it necessary?

N/A

How and when will participants be told of the concealment?

N/A

If never, then, explain why the concealment will not be disclosed to participants.

N/A

Cultural safety

Te Whare Wānanga o Waikato, the University of Waikato, through its official *Charter,* has an explicit commitment to partnership with Māori, to kaupapa and tikanga Māori, and to the interests of New Zealand- born and Island-born Pacific people.

Through the *Ethical Conduct and Human Research and Related Activities Regulations*, researchers are required to respect the **cultural, social** and **language preferences** and **sensitivities** of participants. When applying for ethical approval, researchers should demonstrate an awareness of social and cultural difference, consult advisors regarding the appropriate conduct of their research, and present the outcome of consultation in their ethics application.

Two resources that are particularly relevant to research at the University of Waikato are *Te Ara Tika – Guidelines for Māori Research Ethics* and the *Pacific Health Research Guidelines.*

23. Does the research project have particular relevance or potential implications for Māori, or for other social and cultural groups?

The proposed research has important implications for all groups but no particular importance to specific groups.

If yes, then please provide the following information about your consultation processes:

Who are the stakeholders? (That is, whom do you have to consult?)

Ms Kirsty Dempster-Rivett was consulted about the DASS and its reliability and validity in a New Zealand context, as well as its administration online.

What are the results of your consultation with them so far? (e.g. describe advice taken on appropriate

procedures and approaches to research, decisions made about appropriate ways to return research findings)

The DASS was determined to be a superior measurement of depression, anxiety and stress in the context of this research. The DASS has been shown to be valid and reliable in an online format (Zlomke, 2009). A number of studies have been conducted in New Zealand with the DASS as its primary measure of depression, anxiety and stress (Robinson, Brocklesby, Garisch, et al., 2017; Kaplan, et al., 2015; Lovell, Huntsman & Hedley-Ward, 2014).

References:
Robinson, K., Brocklesby, M., Garisch, J. A., O'Connell, A., Langlands, R., Russell, L., Kingi, T., Brown, E., & Wilson, M. S. (2017). Socioeconomic deprivation and non-suicidal selfinjury in New Zealand adolescents: The mediating role of depression and anxiety. *New Zealand Journal of Psychology Vol. 46,* 3.
Kaplan, B. J., Rucklidge, J. J., Romijn, A. R., & Dolph, M. (2015). A randomised trial of nutrient supplements to minimise psychological stress after a natural disaster. *Psychiatry Research.* http://dx.doi.org/10.1016/j.psychres.2015.05.080i
Lovell, J. P., Huntsman, A., & Hedley-Ward, J. (2014). Psychological distress, depression, anxiety, stress, and exercise in Australian and New Zealand mothers: A cross-sectional survey. *MBA* https://doi.org/10.1111/nhs.12128
Zlomke, K. (2009). Psychometric properties of internet administered versions of Penn State Worry Questionnaire (PSWQ) and Depression, Anxiety, and Stress Scale (DASS). *Computers in Human Behavior, 25*(4), 841-843.

Do you have at least one cultural advisor for this project? Please provide their name(s) and specific role(s).

Dr Cate Curtis will assist in making sure research methods are culturally appropriate and sensitive.

24. Describe how you will show respect and sensitivity towards participants (e.g. having support persons present during interviews, having an interpreter if you are not fluent in the language, being vouched for by elders, using appropriate gestures, dressing inoffensively, or participating in cultural ceremonies or rituals).

There will be no face-to-face interaction.

25. How will the identities of participants (and their communities and/or organisations where relevant) be represented in the research?

Each participant will create a unique identifier at the beginning of the research and no other identifying information will need to be included in the actual data collection. Although participants will need to email their social media use data, they need not include any additional identifying information.

In order for course credit to be allocated or to go into the draw for the voucher, some identifying information or contact information will need to be collected, although this will not be linked to survey answers and participants will be able to provide this information in a separate screen.

Is it important to maintain the confidentiality of participants (and their communities/organisations where relevant) in the research reporting?

It is generally considered appropriate to maintain participants' confidentiality. For this study, it is not important to gather identifying information about participants for

data collection purposes (although they will need to provide a unique identifier so that pre-test, post-test and phone data can be linked).

If yes, how will you preserve confidentiality?

No identifying information about any of the participants will be included in the data or text of the thesis or other written material. The only time identifying information will be asked for is so that participants can receive credit as above. This information will be locked behind a password-protected computer and password-protected cloud files until the completion of data collection and the allocation of credits/prize draw, at which time it will be destroyed.

26. In addition to the lead researcher(s), who else will see information provided by the participants? Will any of the shared information be linked to the participants' names, or will it be anonymised before sharing?

The information about the participants that includes names or other identifying information will not be shared with anyone.

It may be appropriate to ask additional parties (e.g. student researchers, transcribers) to sign a confidentiality agreement. ***Attach*** *the confidentiality agreement that you intend to use.*

27. How and where will the data be stored and protected **during** the research project?

The data will be stored on the lead researcher's personal laptop, with backup copies on Apple iCloud. The laptop and iCloud are password-protected and will not be accessible by anyone. The lead researcher is the only person with access to the laptop.

Research Reporting

28. List all the anticipated research outputs for the project (e.g. thesis, conference papers, journal articles, other sorts of presentation, book, media release, pedagogic materials).

The anticipated research output is for the lead researchers Master's Thesis and the possibility that this will be adapted for journal publication.

What provision is there to provide participants with information about the outcomes of the research?

Participants will be made aware of the outcomes of taking part in the research and where they can find the completed thesis. They will also be provided with a summary of the research at the conclusion through their provided email addresses. Care will be taken to bcc all emails so confidentiality is preserved among participants.

29. Research data must be stored for a minimum of 5 years after the completion of a research project. Where and how will you store your data after the project has been completed? Supervisors are responsible for storing research data on behalf of their students.

Research data will be electronically stored on my password-protected laptop with backup files on my password-protected iCloud for the duration of the research project.

If archiving is appropriate for your project data, where will you archive the data and under what conditions?

Not applicable.

If you do not intend to store your data indefinitely, how will you ensure that your data is safely destroyed?

Electronical files will be deleted permanently at the conclusion of the research project.

Legal Issues

30. Ownership of Human Research Data

It is usual to state that participants own the data that they provide, and that the researcher will use the data for the specified purposes, with the consent of participants. Please explain any variation from this arrangement.

There will be no variation from this agreement.

31. Copyright

The researcher's ownership of scholarly publications and other forms of research outputs is governed by the University of Waikato's Intellectual Property Rights Policy. Crucially the policy states in Clause 8 that*, "the University recognises and endorses the traditional academic freedom of staff to publish research and scholarly documents and to produce creative and artistic works without restriction; the University does not assert ownership of copyright of such works (e.g. books, journal articles, conference papers, art works and musical recordings) unless specified in clauses 12-18 of [the] policy."*

Please explain any variation from this policy.

There will be no variation from this agreement.

Clause 9 states that, *"When dealing with intellectual property that includes Mātauranga Māori, and in the context of the WAI262 claim report, the principles of Te Tiriti o Waitangi will be applied by the University".*

Please indicate if intellectual property is subject to the principles of Te Tiriti o Waitangi.

The intellectual property is not subject to the principles of Te Tiriti o Waitangi.

32. Other legal or ethical issues

Describe any other legal or ethical issues related to this project. Consider particularly relationships between members of the research team, and project funders, sponsors, or other stakeholders.

There are no foreseeable legal issues regarding the research project.

APPENDIX K

Participant Consent Form

By taking part in this research:

1. I have read the Participant Information Screen and I understand it.
2. I have been given sufficient time to consider whether or not to participate in this study
3. I have been given an opportunity to ask questions about this research and have no further questions at this time
4. I understand that taking part in this study is voluntary (my choice) and that I may withdraw by simply closing the survey screen, or refuse to answer questions, without penalty
5. I have the right to decline to participate in any part of the research activity
6. I know who to contact if I have any further questions about the study in general.
7. I understand that the information supplied by me could be used in future academic publications.
8. I understand that my participation in this study is confidential and that no material, which could identify me personally, will be used in any reports on this study.

Declaration by participant:

By continuing on to the next screen, I am indicating that I agree to the above terms. I am also indicating that I would like to participate in this research project and I understand that I may withdraw by refusing to answer questions and closing the survey screen. If I have any concerns about this project, I may contact the convenor of the Human Research Ethics Committee (Health) at humanethics@waikato.ac.nz