Digital Cleanse: Exploring the Effects of Limiting Social Media on Wellbeing

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Abstract

Background: There has been a lot of interest in whether social media (SM) impacts the wellbeing of young people. Literature suggests that passive SM, characterised by 'scrolling', may be responsible for negative changes in wellbeing. Much of the SM research is cross-sectional, and causality has not been clearly established.

Aims: To explore how limiting passive SM may impact wellbeing in several domains of health, in a sample of young New Zealanders.

Methods: Using a randomized waitlist-controlled trial, participants were allocated to either immediately begin a 'Digital Cleanse' (DC) or a waitlist (WL). The DC group were asked to limit passive SM to 15 minutes per day for two weeks. In the WL condition, participants continued to use SM as usual for two weeks before beginning their 'Digital Cleanse'. Wellbeing measures were guided by a holistic Te Whare Tapa Whā model at Time 1 (before randomisation; both groups), at Time 2 (two weeks post-randomisation; both groups) and at Time 3 (after the WL group completed their intervention). Qualitative interviews were conducted with a subsample of participants to explore their experience of the intervention.

Results: 38 participants began and completed the study (19 in DC and 19 in WL). They were primarily female tertiary students. DC participants showed greater improvement in mental and spiritual wellbeing after the initial two weeks than the WL group (mean change in mental wellbeing in DC = 3.98, WL = .36; p < .001; mean change in spiritual wellbeing in DC = 3.23, WL = -.37; p < .001). Per protocol analysis confirmed the primary results and revealed that Fear of Missing Out (FoMO) reached statistical significance (mean change in DC = -3.13, WL = -.32; p = .043). Within-group analysis revealed that all but one outcome measure (loneliness in DC group) improved when participants limited passive SM, regardless of initial group allocation. Interviews (n=9) found that limiting SM led to increased productivity, a realisation that SM was a tool for relieving boredom, and that SM has an addictive quality.

Discussion: A brief intervention limiting passive SM use may improve wellbeing in several areas. We add to research by using experimental design and measuring wellbeing holistically. The size of the study limits generalisability. Replication using a larger and more diverse sample is needed.

Acknowledgements

Glossary of Terms

DC – Digital Cleanse

FoMO – Fear of Missing Out

LET – Life Engagement Test

NZPAQ – New Zealand Physical Activity Questionnaire

PSMU – Problematic Social Media Use

SM – Social Media

SMU – Social Media Use

SNS – Social Networking Site

SWEMWBS - Short Warwick Edinburgh Mental Wellbeing Scale

Taha Hinengaro – Mental Wellbeing

Taha Tinana – Physical Wellbeing

Taha Wairua – Spiritual Wellbeing

Taha Whānau – Family/Social Wellbeing

Te Whare Tapa Whā – Holistic Māori model of wellbeing

ULS-8 – Short-Form UCLA Loneliness Scale

WL – Waitlist

Table of Contents

List of Tables

List of Figures

Chapter 1: Literature Review

What is Social Media?

When it was first coined in 1994, the term 'social media' (SM) pertained to a small number

of people interacting with each other in a digital space (Bercovici, 2010). Since then, social network

sites (SNS) such as Facebook, Instagram, Snapchat, and Twitter have become a staple in the lives of

over half the global population, with 4.2 billion active social media users today (Statista, 2021a).

While the terms 'social media' and 'social network site' have been used interchangeably, it is

important to acknowledge that 'social media' refers to the general arena in which digital content is

broadcasted. Social network sites are defined as "*networked communication platforms in which*

participants 1) have uniquely identifiable profiles that consist of user-supplied content, content

provided by other users, and/or system-level data; 2) can publicly articulate connections that can be

viewed and traversed by others; and 3) can consume, produce, and/or interact with streams of user-

generated content provided by their connections on the site" (Ellison & Boyd, 2013, p. 158). Thus,

'social network sites' refer to the specific platforms in which individuals engage with digital content,

while 'social media' refers to the digital arena in which these social network sites operate. However,

these terms are used interchangeably in public discourse and literature, and therefore both terms

will be used interchangeably in this thesis. The release of smartphones in the early 2000s,

particularly the iPhone in 2007, profoundly accelerated SNS growth. Rather than having to be at a

computer to access SNS, individuals could now access SNS at any time, anywhere. This is exemplified

by the fact that 97% of New Zealanders currently access social media via their smartphone

(Datareportal, 2021).

Social network sites have consequently exploded in popularity over the past couple of

decades. Sites such as Facebook, Instagram and YouTube are commonly used around the globe. The

most popular SNS is Facebook, with over 2.9 billion active users as of October 2021 (Statista, 2021b).

Facebook was originally a free service launched in 2004 to connect American university/college

students. The platform is designed to "*help you connect with friends, family and communities of*

people who share your interests" (Meta, 2021a). Users must be over the age of 13, and the site's

initial purpose was to allow individuals to keep up with the activities of friends and families. More

recently, Facebook has been utilised by news outlets, businesses, entertainers, and celebrities to

share content, and users are now able to buy and sell products via the Facebook Marketplace. In

2011, Facebook launched a standalone Messenger app where users could directly message others

without using Facebook itself. With the most extensive global reach, the company also boasts the

highest revenue of all social media platforms, reporting an income of US$86 billion in 2020 (Statista,

2021c).

The Facebook company recently (2021) changed its name to Meta and owns some of the

other biggest social network sites, including Instagram (4th largest) and WhatsApp (3rd largest). Meta

acquired Instagram, the photo and video sharing platform, in 2012. Instagram is described as a *"safe*

and inclusive community where people can express themselves, feel closer to anyone they care about

and turn a passion into a living" (Meta, 2021b). Instagram works differently from Facebook, where

users are not 'friends', but instead, users choose to 'follow' one another. The primary purpose of

Instagram is to post photos and 'check in' at different locations. Users may also select their profile to

be public or private, with the latter meaning other users must 'request' to follow that individual's

page. Instagram is said to have 1.4 billion active users (Statista, 2021b) and many celebrities and

world leaders use it to share content and engage with their followers. Users can also upload 'stories'

(photos or videos which last for only 24 hours), of which over 500 million are uploaded each day as

of January 2019 (Statista, 2021d). Meta also owns WhatsApp, an encrypted messaging-based service

that they say can *"connect you with the people you care about most, effortlessly and privately"*

(Meta, 2021c). WhatsApp has over two billion active users (Statista, 2021b).

YouTube, a video-streaming service, allows users to watch and comment on billions of

videos ranging from music to documentaries to amateur home video footage. YouTube is the second

most popular SNS, with just under 2.3 billion users (Statista, 2021b). YouTube differs from SNS such

as Facebook and Instagram as it is solely concerned with video sharing. User profiles are called

'channels', comprised of the videos they upload, in contrast to the Facebook or Instagram user profile which includes personal information, photos, videos and 'friends' or 'followers'. Users can 'subscribe' to channels; however, users can still comment on these and thus interact with other users. As of February 2020, over 500 hours of videos were uploaded to YouTube every minute. The platform is localised in over 100 countries, meaning it adapts depending on the country it is being accessed and is available in 80 different languages (Omnicore, 2022).

A significant newcomer to social media is TikTok, a video sharing platform launched in 2016 that recently reached 1 billion active users. TikTok is owned by Chinese company ByteDance and was the second-fastest app behind Facebook Messenger to reach 1 billion users, taking just over five years (Statista, 2021e). With similarities to YouTube, TikTok users upload and view short videos of under two minutes in length. Uniquely, the app features no 'home page' as such. Instead, users are immediately presented with videos upon opening the app and must direct themselves to a specific user profile if they wish to see it.

The above five platforms are among the most popular and dominant currently. However, they compromise only a handful of the hundreds of apps and sites used globally. Other popular SM platforms include Reddit, a long-form discussion blog; Pinterest, where users share images and videos on 'pinboards'; and Twitter, used for ultra-brief 'tweeting' of information and opinions. These apps also have hundreds of millions of users between them.

The landscape of social media is thus multi-layered, complex, and ever-changing. Researchers must therefore adapt to understand and include the most widely used platforms at the current time. Overall, social networking sites take different forms, provide a wide range of features, and promote or rely on different user behaviours. However, the important commonality between them is that they involve users uploading various content (words, pictures, videos, links etc.) and interacting with content about themselves, others, and their environment. However, users don't need to post content, and many simply browse the platforms.

Young Adults and Social Media

Young adults appear to be particularly heavy users of social media (Arnett et al., 2014; Auxier & Anderson, 2021), with 70% of young people reporting that checking social media or notifications on their smartphone is an automatic, 'reflex-like' action (Mediaraven & LINC, 2018). When Pew Research Centre started recording the amount of active social media users in 2005, only 7% of 18-29-year-old Americans reported using at least one SNS. Five years later, this number jumped to 82%, and as of 2021, it sits at 84% (Auxier & Anderson, 2021). Use of SNS appears to decline with age, with US survey results indicating that up to 90% of 18–29-year-olds use SNS, compared with 82% of 30–49-year-olds, 69% of 50–64-year-olds and 40% of 65+-year-olds (Statista, 2021f).

In New Zealand (NZ), 3.97 million people (82% of the population) are social media users, spending an average of just under two hours using social media each day (Datareportal, 2021). Additionally, the overwhelming majority (97%) access social media using a smartphone, with each NZ user holding an average of seven social media accounts across varying platforms. According to a recent report, the most popular sites in New Zealand are YouTube and Facebook, with 87% and 83% of users having visited each respective website in the past month (Datareportal, 2021). Younger cohorts appear to be the heaviest social media users in New Zealand. A 2016 report found that 15 to 34-year-olds spent 35% more time online than other age groups (Nielsen, 2016). A 2018 Netsafe study reported that one-third of New Zealand adolescents spend four or more hours online per day, approximately double the 'average' New Zealander (Netsafe, 2018).

Research has found considerable differences in how different age groups engage with SNS (Bekalu et al., 2019; Keyes, 1998; Kuss et al., 2018). Adolescents and young adults encounter unique and complex developmental milestones that may impact their interaction with social media (Zarrett & Eccles, 2006). For example, adolescents may be dealing with the pressure of discovering who they are and where they belong in the social hierarchy, while, in contrast, young adults may be dealing with stresses such as leaving home, establishing romantic relationships, and beginning a career

(Christie & Viner, 2005). These differing life stresses may thus significantly affect how each group uses social media.

Notably, an increasing number of young people appear to be displaying signs of "problematic social media use" (PSMU). Scholars have recently coined this term to describe the addictive nature of social media (Andreassen et al., 2017; Durak & Senol-Durak, 2014; Meena et al., 2012; Wang et al., 2015). Andreassen and Pallesen (2014) describe PSMU as "*being overly concerned about SNS, driven by a strong motivation to log on to or use SNS, and to devote so much time and effort to SNS that it impairs other social activities, studies/job, interpersonal relationships, and/or psychological health and wellbeing*" (p.4054). It is estimated that the prevalence of problematic Facebook use is between 2% and 10% among young people globally (Marino et al., 2018). A recent study in New Zealand found that one in four young people reported that they would be "devastated" if they had no access to digital technologies for a month (Netsafe, 2018), suggesting a potential dependence or problematic relationship between young people and their social media use (SMU). Shensa et al. (2017) found that 44% of their sample aged 19-32 showed signs of PSMU and revealed a strong association between PSMU and depressive symptoms. More recently, researchers explored whether the stress of the global COVID-19 pandemic impacted problematic social media use. Indeed, researchers Zhao and Zhou (2021) found an apparent association between COVID-19 stress and PSMU in a study of 512 Chinese tertiary students. The authors found that individuals who experienced more COVID-19 stress were at increased risk of PSMU. Several other studies also suggested that increased social media use due to lockdown situations negatively affected wellbeing in areas such as loneliness (Boursier et al., 2020; Lisitsa et al., 2021) and depression (Hou et al., 2020). Conversely, other studies suggest that, rather than being the problem, SM might be used as a coping mechanism for the stress of COVID-19 (Cauberghe et al., 2021). Zhao and Zhou (2021) noted that general stress has previously been linked to PSMU (Brailovskaia et al., 2019), and thus COVID-19 related stress was potentially no different. However, a recent commentary report from The University of Auckland stated that the impact of COVID-19 on youth mental health in New Zealand is

likely to be "*extensive and enduring*" (Menzies et al., 2020, p.2). Research surrounding the impact of COVID-19 on wellbeing continues to be relevant due to the ongoing uncertainty around the globe, with many still facing restricted face-to-face social interactions, restrictions on travel and isolation requirements.

Is There a Global Rise of Mental Health Distress?

Over the past couple of decades, there has been a growing concern about apparent changes in experiences and reports of mental health distress among young people, both overseas and in New Zealand. First, it is important to deconstruct and define what 'mental health' and 'mental wellbeing' encapsulate. In their dual-factor model of mental health, Suldo and Shaffer (2008) explain that psychopathology (the presence of specific mental health diagnoses, such as depression or anxiety) is distinct from overall mental wellbeing. The authors refer to Greenspoon and Saklofske (2001), who demonstrated that psychopathology could co-exist with high life satisfaction. Equally, those without traditional psychopathological markers could experience low life satisfaction. Other scholars such as Cowen (1994) and Park (2004) have commented that mental wellbeing is more than just the absence of a psychological disorder. For example, Park notes that "*positive indicators such as life satisfaction should be included in any assessment battery to capture comprehensively what is meant by the psychological wellbeing of youth*" (p. 27). Suldo and Shaffer expand on this idea and posit that psychopathology and subjective wellbeing are separate constructs that uniquely impact individuals' feelings. Thus, while clinical diagnoses such as depression and anxiety may contribute to overall mental wellbeing, they are just one aspect of a broader wellbeing construct. Much of the previous research has focussed on the impact of SMU on clinical mental health outcomes, which will be discussed in the following literature review. However, the distinction between these concepts is important to note, as mental wellbeing scales will be discussed later in this thesis.

Research findings have suggested a steep rise in mental health distress among young people in the past couple of decades. In the US, young adults are at higher risk of developing a psychiatric

disorder than any other adult age group (Kessler et al., 2005). They also experience the highest

prevalence of any mental illness (29.4%) and serious mental illness (8.6%) compared to other adult

groups (National Institute of Mental Health [NIMH], 2019). Duffy et al. (2019) examined two large

national datasets (n = 788,235) assessing mental health among American undergraduate students

between 2007 and 2018. Participants completed self-report measures of past-year mood, anxiety,

non-suicidal self-injury, and suicidal thoughts and behaviours. The researchers found significant

increases in rates of depression (74% increase), anxiety (92% increase), non-suicidal self-injury (47%

increase), and suicidal ideation (81% increase). Severe depression (145% increase) and suicide

attempts (157%) increased by more than double, and suicide plans (313%) increased by more than

triple.

Another US study by Goodwin et al. (2020) looked at cross-sectional data of 439,691

participants in the National Survey on Drug Use and Health (NSDUH), finding a marked increase in

rates of anxiety in American adults between 2008 and 2018. Importantly, 18-25-year-olds

experienced the most significant increase in anxiety, with prevalence increasing from 7.97% to

14.66% across the ten years. Furthermore, the observed increase was notably higher than 26-34-

year-olds and 35-49-year-olds. Research by Morgan et al. (2017) examined data from 16,912 young

people who had self-harmed in the UK between 2001 and 2014. The authors found that, among girls

aged 13-16 years old, self-harm increased by 68% between 2011 and 2014, from 45.9 per 10,000 to

77 per 10,000. Twenge et al. (2021) recently released a significant paper documenting the rates of

'school loneliness' (e.g., "I feel like an outsider (or left out of things) at school") among 15–16-year-

olds in 37 Organisation for Economic Co-operation and Development (OECD) countries (n =

1,049,784) between 2000 and 2018. The authors found that school loneliness significantly increased

over time, with most of the change occurring after 2012. Furthermore, the observed changes were

vast, with the UK, the US and New Zealand recording some of the highest increases (113%, 100% and

81%, respectively).

In New Zealand, a 2019 Ministry of Health report found that the prevalence of psychological distress in young adults aged 15–24 was significantly higher than in adults aged 25 and over (14.5% compared to 4.2–8.7%) (Ministry of Health, 2019). Furthermore, a 2020 commentary report by The University of Auckland noted a "*rapid and concerning rise in youth psychological distress and suicide rates*" (Menzies et al., 2020, p.2) over the past decade, describing youth mental health as *"persistently inequitable and worsening"* (p.2). These claims appear to be backed by the Adolescent Health Research Group - a collaborative project between researchers from the University of Auckland, Victoria University of Wellington, University of Otago & Auckland University of Technology. The research monitors the health and wellbeing of young New Zealanders, collecting data every five to six years. In the 2019 report, the researchers noted that "*youth emotional and mental health appears to have worsened compared to previous Youth2000 surveys in 2001, 2007 and 2012, with most of this change occurring since 2012*" (Fleming et al., 2020, p.1). The 2019 survey included 7891 secondary school students throughout Northland, Auckland, and Waikato, finding that 23% of young people reported depressive symptoms, compared to 13% in the 2012 findings. Additionally, 6% in 2019 reported having attempted suicide in the past year, compared to 2.2% in 2012, supporting the notion that youth mental health is declining. Other concerns are about the suicide rate. For example, between 1990 and 2015, New Zealand had the highest rate of suicide for people aged between 15 and 19 years old among OECD countries, with a rise of approximately 10% between 2008 and 2015 (OECD, 2017).

The Parallel Rise of Social Media Use and Mental Health Distress

Notably, some data suggest that mental health distress appeared to rise steeply around 2012, coinciding with the growth of social media usage. In a study investigating the apparent sudden decline in youth wellbeing after 2012, Twenge et al. (2018a) note that "*smartphones were used by the majority of teens the year that depressive symptoms began to increase and by nearly all teens when depressive symptoms peaked*" (p. 14). The timing in which there has been a simultaneous rise

in smartphone ownership, widespread use of SM and an increase in mental health distress has

sparked debate among scholars about the nature of the relationship between these factors. For

example, Twenge et al. (2018b) conclude that "*the rapid adoption of smartphone technology in the*

early 2010s may have had a marked negative impact on adolescents' psychological wellbeing" (p.1).

Others disagree and note that owning a smartphone and spending time on it does not predict

declines in wellbeing. These arguments point to research by Berryman et al. (2018), which suggests

that it is how individuals spend their time on social media that is of significance, a point I will return

to later in the chapter. It is, however, well established that both SMU and rates of mental distress

among young adults have increased since 2012, both in New Zealand and overseas. Research about

the relationship between smartphone ownership, screen time and social media in particular and

possible effects on wellbeing has only emerged recently, and many questions remain to be

answered. The following sections of this chapter will focus on what is known about the effects of

social media on different aspects of wellbeing.

Viewing Wellbeing Holistically – Te Whare Tapa Whā

In recent years in New Zealand, there has been a gradual shift to view health more

holistically, with the recognition and adoption of Māori models of wellbeing to complement

mainstream or western views of health. Mason Durie's (1985) Te Whare Tapa Whā is one of the

leading models widely used in New Zealand/Aotearoa. It will be used in this thesis to examine the

existing literature on the potential impact of social media use on health and wellbeing. New

Zealand's founding document, Te Tiriti O Waitangi, describes Aotearoa as a bicultural country, and

thus indigenous health models may help support both cultures equally. It is important to

acknowledge that there are various other models, including the Meihana model (Pitama et al., 2007)

and Te Wheke (Pere, 1982). Still, Te Whare Tapa Whā is one of the more widely used and known

frameworks.

Te Whare Tapa Whā identifies the holistic, dynamic interaction of four health and wellbeing domains. With its strong foundations and four equal sides, the symbol of the wharenui (communal house) illustrates the four dimensions of wellbeing: Taha Tinana (physical health), Taha Wairua (spiritual health), Taha Whānau (family/social health) and Taha Hinengaro (mental/emotional health). The model suggests that should one of the four dimensions be missing or in some way damaged, a person or a collective may become 'unbalanced' and subsequently unwell.

In Taha Tinana, good physical health is needed for optimal development and helps to support one's essence and shelter one from the external environment. Taha Wairua refers to spiritual health, and critical aspects involve the capacity for faith and broader communication. It says that the spiritual essence of a person is their life force, and analysis of physical manifestations will focus on wairua to see if damage here is causing ill health. Spiritual health may mean different things for individuals, including connection to religion, the environment, faith or philosophy. Taha Whānau incorporates family health and focuses on the capacity to belong, care, and share where individuals are part of broader social systems. Taha Whānau may also be interpreted as an area of social wellbeing, as whānau may include family, friends, and acquaintances. Whānau often plays a significant role in the social wellbeing of an individual, and the Western view of social wellbeing may be best understood as part of this wall of the whare (house). Taha Hinengaro focuses on mental and emotional health, involving the capacity to think and feel. There is a focus on the notion that the mind and body are inseparable in Taha Hinengaro. For Māori, this model addresses specific cultural needs that Western models may not incorporate and help better understand and treat mental health problems. Equally, Pakeha may benefit from a more holistic model of health by considering these different aspects of wellbeing. For example, holistic health models have improved wellbeing outcomes such as anxiety and positive thinking in university students (Chukumnerd, 2016).

Looking at wellbeing guided by the lens of the Te Whare Tapa Whā model, the next sections of this chapter will provide more detail on the possible effects of social media on these different aspects of wellbeing. While Te Whare Tapa Whā is becoming widely used in New Zealand, it is not

universal. Thus, assumptions about spiritual or social wellbeing are not definitive, and some of the

constructs may overlap or not map very well onto the model. However, I have had to make some

interpretations to provide a measurable scale for each health domain. There has been a mix of

research concerning the potential impacts of social media on wellbeing, indicating both negative and

positive consequences of SMU. To begin, I will examine the potential negative effects of social media

on the four cornerstones of wellbeing previously discussed since this has been the subject of much

debate and research as of late. However, to examine the picture more fully, I will then look at the

reverse and focus on the positive impacts where those are apparent. Finally, I will examine the key

methodological limitations of research in the area and discuss some of the nuances involved in the

research.

Examining the Potential Negative Impacts of Social Media Use on Wellbeing

Mental Wellbeing (Taha Hinengaro)

The potential effects of social media on mental wellbeing have received considerable

research and general public attention. To date, most of the research has examined the link between

SMU and common mental health problems such as depression and anxiety. In a systematic review of

11 studies comprising a total sample size of 12,646, McCrae et al. (2017) found a statistically

significant relationship between SMU and depressive symptoms in children and adolescents aged 10

– 18 years old from a wide range of countries, including the United States, Romania, and Taiwan

among others. However, this review's findings have limitations, including a small effect size (r = 0.13)

and its methodology, with over half of the studies included being cross-sectional in design. Cross-

sectional designs are used to gather data about a population at a particular point in time, taking a

'snapshot' of the sample at the time of measurement (Kesmodel, 2018). This design is popular as

many different variables, including age, race and gender, can be compared at once. However, since

cross-sectional designs only take a 'snapshot' in time and do not consider what happens before or

after that time, they are problematic for making causal claims. Therefore, cross-sectional designs

cannot comment on whether one variable *causes* another. Instead, it can only be claimed that the two are *correlated*.

Another systematic review by Marino et al. (2018) investigated two associations - problematic Facebook use and psychological distress; and problematic Facebook use and psychological wellbeing, in 23 studies pooling a total sample of 13,929 young adults with a mean age of just under 22. The researchers defined problematic Facebook use as "*a problematic behaviour characterized by either addictive-like symptoms and/or scarce self-regulation related to Facebook use reflecting in social and personal problems*" (p. 274). Results indicated a moderate positive association (r = .34) between problematic Facebook use and psychological distress and a small negative association (r = -.22) between problematic Facebook use and psychological wellbeing. Most participants were from Western countries, but a small number came from Asian and African populations, with the effect size appearing to be stronger in participants from Western countries (p=0.07). The Marino et al. (2018) findings suffered similar limitations to the McCrae et al. (2017) review above. All included studies were cross-sectional designs, signifying that no causal claim should be made between the variables. In other words, it is possible that those with more psychological distress may simply spend more time on Facebook, and those who feel happier may have a more balanced or less problematic pattern of social media use. Furthermore, the Marino and colleague's review only looked at Facebook use rather than various SM platforms, and people tend to use multiple rather than single platforms.

Yoon et al. (2019) conducted four separate meta-analyses on the relationship between depressive symptoms and four aspects of SMU: (1) time spent on SNS, (2) SNS checking frequency, (3) general and (4) upward social comparisons on SNS. General social comparisons occur when individuals compare themselves to others on social media. However, upward social comparison relates to an individual "*comparing oneself with superior others who have positive characteristics*" (Vogel et al., 2014, p. 206), for example, comparing to a celebrity on Instagram. Findings showed small positive correlations between depressive symptoms and time spent on social media (r = 0.11)

and depressive symptoms and how frequently participants checked social media (r = 0.10).

Additionally, the review authors found a small to medium positive correlation between depressive

symptoms and general social comparisons made on SM (r = 0.23) and a medium correlation between

depressive symptoms and upward social comparisons made on SM (r = 0.33). Although the social

comparison associations are slightly stronger, the sample sizes for these studies were relatively

small. Some studies had fewer than 100 participants, compared to the thousands measured in the

other studies cited above, and most were cross-sectional.

Keles et al. (2020) conducted a narrative synthesis of 13 studies, investigating the

relationship between psychological distress and time spent on SM, activities on SM (e.g., frequency

of checking messages, scrolling, posting content), investment in SM (e.g., amount of identity-related

information posted on SNS), and addiction to SM measured via self-report SM addiction scales.

Results showed that all domains measured were correlated with depression, anxiety, and

psychological distress; however, no effect sizes were reported, so the strength of association is

unknown. Similarly to the Marino et al. review, 12 of the 13 studies reviewed by Keles et al. were

cross-sectional designs meaning causation could not be established.

One of the most notable individual studies examining SMU and mental wellbeing was

conducted by Twenge et al. (2018a). After observing a steep rise in depressive symptoms and

suicidality among adolescents between 2010 and 2015, the researchers examined data from a

nationally representative survey of over half a million US adolescents taken since 1991. Statistical

analyses suggested that those who spent more time on social media were more likely to report

mental health issues. Furthermore, those who used electronic devices for three or more hours a day

were 34% more likely to have at least one suicide-related outcome than those using devices two or

fewer hours a day. Additionally, individuals who spent more time engaging in non-screen activities

were less likely to report mental health problems, with negative correlations observed between

depressive symptoms and sports and exercise (r = -.22) and print media use (r = -.11), among others.

While the large sample size suggested a significant finding, the study was subject to several

limitations. Most importantly, the measure of SMU was a 5-point Likert scale with response choices as 'never', 'a few times a year', 'once or twice a month', 'at least once a week', and 'almost every day'. When the study was published, 45% of adolescents said they were almost constantly online, and 90% reported using social media every day (Anderson & Jiang, 2018). Thus, the study could not distinguish between participants who spent 10 minutes per day and 10 hours per day using SM. Secondly, the study used a cross-sectional design and cannot shed light on causation or the direction of the association. Thirdly, depressive and suicidal symptoms were based on self-report measures, which are subject to response bias (Hunt et al., 2003). Finally, the authors only measured time spent on screens rather than the type of engagement with SM platforms. Some scholars have posited that time spent on SM is a poor predictor of mental wellbeing. For instance, Berryman et al. (2018) comment that rather than "mere exposure" (p. 308), *how* users spend their time on social media is perhaps most relevant, an idea that will be expanded on later. Overall, while the Twenge et al. study highlights an important association, the various limitations should be duly noted.

As previously mentioned, mental health distress is only one aspect of a broader mental wellbeing construct. While the above research has attempted to examine the relationship between social media and specific mental health problems such as depression and anxiety, various other studies have looked at mental wellbeing facets such as life satisfaction and affective wellbeing. Additionally, some studies have used mental wellbeing scales as outcome measures rather than looking at clinical outcomes such as depression or anxiety. In one of the first and most influential social media studies, Kross et al. (2013) text-messaged 82 people five times per day for two weeks, asking about how much time they had spent on Facebook since the previous text message. In addition, they asked questions relating to life satisfaction and affective wellbeing. Results indicated that the more individuals used Facebook over the two weeks, the lower their life satisfaction was. However, directly messaging others using Facebook did not predict these wellbeing decreases. This was among the first evidence indicating that directly messaging and 'passively' browsing Facebook may result in different outcomes on wellbeing, a potentially critical distinguishing nuance. In

addition, the longitudinal design of the Kross et al. study gives weight to its significance. As mentioned, cross-sectional designs take a 'snapshot' of the sample being measured. In contrast, longitudinal designs measure participants at several time points and track developments and changes along the way. While this may place more burden on participants and be time-intensive for researchers, it better helps establish a cause and effect.

Other studies have found associations between social media use and mental wellbeing, rather than mental health problems such as depression or anxiety. These studies have used mental wellbeing scales such as the Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) as an outcome measure, including items related to flourishing and positive mental wellbeing, such as, "*I've been feeling useful*". The WEMWBS thus incorporates positive aspects of wellbeing in contrast to the deficit-based clinical scales. Research thus not only indicates an association between social media use and mental health distress, but also between social media use and the broader mental wellbeing construct that encapsulates positive wellbeing. For example, Hudimova et al. (2021) reported a negative association between mental wellbeing and social media use among 254 Ukrainian young adults aged 16 – 21. Additionally, experimental research by Graham et al. (2021) found that mental wellbeing improved after one week of limiting social media use to ten minutes per day in a sample of 132 undergraduate students. In contrast to cross-sectional research, experimental studies involve manipulating the conditions of one group of participants whilst also measuring a control group to examine differences (Kirk, 2012). Experimental design thus helps to establish cause and effect. Much of the experimental research concerning SMU and mental wellbeing has examined the impacts of restricting SMU and will be discussed in depth later.

Social Wellbeing (Taha Whānau)

Taha whānau translates to family health but is commonly understood more broadly as social wellbeing. When describing this dimension of health, Durie (1985) notes that *"family, in a Māori sense, denotes an extended kinship system, rather than a nuclear family"* (p. 484). This family-

oriented approach implies that the strength of relationships within this extended kinship system

determines good health, a stark contrast to the Western ideals of independence and leaving the

family home. Whānau encompasses a broad range of relationships from close blood relatives to

distant cousins and friends. In this way, health is much more closely related to relationships with

others and thus can be conceptualised as social wellbeing.

Loneliness is often cited as the most relevant aspect of social wellbeing linked to social

media use. A key feature that social media companies advertise is that their platforms bring people

together. It would seem counterintuitive then to think that social media use could negatively impact

social wellbeing by *increasing* loneliness. However, a portion of the literature suggests this to be

true. A recent systematic review by O'Day & Heimberg (2021) looked at 52 studies in which a

primary focus was on the relationship between SMU and loneliness. The review found that research

concerning SMU and loneliness is in its infancy and only a few longitudinal and experimental studies

exist examining the nature of the relationship. The researchers comment on the direction of the

association, which indicates that while loneliness appears to predict increases in SMU, there are no

studies to suggest that SMU predicts changes in loneliness. However, contrary to this suggestion,

other studies in the literature indicate that SMU may increase loneliness.

Brandtzæg (2012) ran a longitudinal study of 2000 Norwegian individuals aged 15-75 and

had participants take an annual survey over three consecutive years (2008, 2009, 2010). The survey

asked whether participants used SNS and measured loneliness using the Revised UCLA Loneliness

Scale (Russell, 1996). Findings revealed that SM users reported more loneliness than non-users,

particularly males. Brandtzæg explains that this may be down to the stereotype that male, heavy

SNS users are "*computer nerds*" and "*lonely, attention-craving individuals*" (p. 483) and this

amplified their loneliness. However, due to the significant growth in male (and female) social media

users since the paper was published, this stereotype does not appear to exist anymore, potentially

making this claim outdated. Nevertheless, loneliness was higher in SM users than non-users,

regardless of gender. Whilst the finding does not specifically apply to younger cohorts, the sample size and longitudinal design make it a notable piece of research in this area.

More recent research by Marttila et al. (2021) used a longitudinal design with 1134 Finnish participants over 15 months. The researchers measured several variables, including time spent on SM, problematic SMU, life satisfaction and loneliness. Results showed that problematic SMU predicted increases in loneliness between time points. Another key finding was that while problematic SMU predicted loneliness over time, the reverse was not true. That is, being lonely did not predict any change in problematic SMU. This finding seems to contradict the claims made by O'Day & Heimberg (2021), who posit that no studies found social media use to cause changes in loneliness. It appears that this relationship may be bi-directional, but further research must be done to understand it better. This research is still in its early stages, and no consensus currently exists on the direction of the relationship.

In light of COVID-19 lockdowns and increased social isolation, researchers have investigated the relationship between SMU and loneliness since the pandemic started in 2020. Lisitsa et al. (2020) had 1674 participants of various age groups take an online questionnaire measuring depressive symptoms, loneliness, coping strategies, and changes to their day-to-day activities in response to the COVID-19 pandemic over the past month. Participants were recruited from an area in Washington, USA, which was the epicentre of the COVID-19 outbreak in the US. Lisitsa et al. found that 18–34-year-olds reported significantly more loneliness than those over 35 ($p < .01$). More importantly, increased social media use appeared to be responsible for the increase in loneliness. This finding is highly relevant as many people worldwide continue living in some form of lockdown or other restrictions on gatherings and therefore may be spending more time on social media, putting them at further risk of increased loneliness. However, due to the cross-sectional nature of the research, such claims should be taken with caution. Bonsaksen et al. (2021) found that in a survey of 3810 participants from Norway, the US, UK and Australia, loneliness was highest in younger participants

and those who used SM the most, supporting the idea that SMU may have negative repercussions

for social wellbeing, particularly in the current social climate.

Physical Wellbeing (Taha Tinana)

Another area of health linked to social media use is physical wellbeing. Studies in this area

tend to focus on physical activity levels as a sign of healthy physical wellbeing. While there are other

ways to measure physical wellbeing, such as diet, substance use and muscle/joint health, physical

activity levels are the most well studied in relation to SMU.

Early research focused on the relationship between cell phone use and physical activity.

Cross-sectional (Lepp et al., 2013) and experimental (Rebold et al., 2016) findings suggested that

increased cell phone use was associated with lower physical activity levels. However, these studies

often examined texting and calling rather than social media use specifically. Building on these early

studies, more recent research has looked directly at how SMU impacts physical activity. Shimoga et

al. (2019) examined physical activity levels and SMU of over 40,000 US adolescents in a cross-

sectional survey. Results indicated that increases in physical activity were highest when social media

was moderate, in what is known as the "Goldilocks effect" (Bélanger et al., 2011; Przybylski &

Weinstein, 2017). The Goldilocks effect refers to an inverted U shape in which a moderate amount of

one variable (in this case, social media) results in positive impacts on another variable (in this case,

moderate physical activity). However, the authors measured the frequency of social media on a

simple Likert scale with self-reported responses ranging from 'never', 'a few times a year', '1-2 times

a month', 'once a week' and 'every day'. As previously mentioned, such scales are poor at

representing the actual amount an individual uses SM, as 'every day' could mean several minutes or

several hours. Furthermore, mere time spent on social media may also be a poor predictor of

physical wellbeing outcomes. It may be that users who spend more time on SM are engaging with

fitness communities and peers to enhance their physical activity regime. The authors acknowledge

this to some degree, as higher SMU was associated with more vigorous physical activity among

those already physically active. The authors note that this could be due to a positive feedback loop in which users share and compare their physical data and receive feedback on applications such as Strava, a popular fitness tracking app. Users may gain a certain thrill from achieving specific goals on the applications, such as who runs the longest distance or is fastest on a particular stretch of road. Conversely, the Shimoga et al. findings showed that more sedentary individuals participated in less physical activity with increased SMU. The researchers posit that for sedentary individuals, time spent on social media is prioritised over other activities. These results highlight the need to account for individual differences within social media research. The authors note that their results *"suggest that a one-type-fits-all approach may be detrimental to those who are already in the group that is at most risk of adverse behaviours"* (p. 6). If social media takes up time that people could use to exercise, this could have important ramifications. Increased SMU may increase the risk of preventable deaths such as heart disease and obesity, and consequently, research must consider individual differences.

A recent study by Grimaldi-Puyana et al. (2020) examined the relationship between smartphone use and physical wellbeing in 306 Spanish young adults, with some significant findings. A novel aspect of the study was its attempt to resolve methodological issues faced by previous studies in this domain, which have predominantly relied on self-report measures. These measures are problematic as they are subject to user bias, resulting in over or under-reporting (Hunt et al., 2003). Therefore, the researchers in the Spanish study utilised the screen time function to provide an objective measure of smartphone use, known to provide a more accurate level of SMU than self-report measures (Sewall et al., 2020). In addition, GoogleFit and Apple Health provided an objective measure of physical activity. The study reported several novel findings. Firstly, the researchers found that low physical activity levels were independently associated with objective measures of smartphone use. Specifically, participants with low activity levels were almost three times more likely to spend increased time on their smartphones. Secondly, it showed that objectively measured smartphone use was independently associated with sedentary behaviour. Specifically, the authors found that increased smartphone use was positively correlated to time spent sitting down. While

Grimaldi-Puyana and colleagues' measures of screen time and activity were more robust than

previous studies, they also noted some limitations. For example, the cross-sectional design means

that researchers could not infer the direction of the association. It could be true that spending more

time on smartphones causes individuals to be less active. Conversely, it could be posited that less

active individuals spend more time on their phones, perhaps due to prioritising that time over being

active.

Spiritual Wellbeing (Taha Wairua)

In Māori culture, wairua is seen as one of the most crucial aspects of wellbeing. However,

Western-dominant cultures have only recently acknowledged the importance of spirituality for

wellbeing. Consequently, there is a lack of research examining the links between social media and

spiritual wellbeing. What follows is a summary of what is known, even though the literature in the

area is sparse. While religious beliefs encompass an aspect of spirituality and often spring to mind

when the word 'spiritual' is mentioned, religiosity does not define spirituality. Rautela & Sharma

(2019) posit that spirituality revolves around "*finding inner peace and harmony*" (p.93). Thus religion

may be a tool used to maintain spiritual wellbeing, similar to how mental health distress is one

aspect of mental wellbeing.

Nevertheless, some research has examined religion and SMU. One study found that those

who read the Bible more are less likely to use SNS (Miller et al., 2013). This may be important as

religiosity has strong links to lower rates of depression (Rosmarin et al., 2009). However, as

mentioned, religiosity is limited in that it does not define spirituality, which may take many forms,

such as connection with nature, philosophy or meditation.

Only one study has investigated the link between SM and spiritual wellbeing in the

literature. Wood et al. (2016) looked at the role of spiritual wellbeing and religiosity as mediators

between problematic SMU and depression and anxiety in 209 American undergraduate students

with a mean age of 20.23. Measures included the Facebook Intrusion Questionnaire (Elphinston &

Noller, 2011), the Depression Anxiety Stress Scales 21 (Lovibond & Lovibond, 1995), the Religious

Commitment Inventory-10 (Daaleman & Frey, 2004) and the Spirituality Index of Wellbeing

(Worthington et al., 2003). Findings of the study indicated that PSMU was significantly positively

associated with depression (r = .18) and anxiety (r = .21), in line with previous research, although

these are weak correlations. However, a novel finding of the study was the role of spiritual wellbeing

as a mediator of the relationship. Specifically, self-efficacy was identified as the aspect of spiritual

wellbeing that mediated the association, whereby participants' SMU was related to higher

depression and anxiety scores due to lower self-efficacy. One definition of self-efficacy by Bandura

(1977) is the ability to execute behaviours and tasks confidently. The authors put forward the idea

that self-efficacy may mediate the association between PSMU and wellbeing as "*individuals who use*

social media more and allow it to colour the way they view themselves and others may then

experience a diluted sense of self-efficacy or ability, which in turn may lead to increased stress" (p.

979). A lack of self-efficacy may lead individuals to allow their interpretation of others' lives to inhibit

them from achieving their own goals. Individuals may feel that others are 'getting ahead' of them or

cannot achieve their goals the way others are upon comparing themselves to others on SNS. These

diminished feelings may cause stress and negatively impact psychological wellbeing.

      The authors note some nuances in the research that are important to consider. Firstly, the

measure of spiritual wellbeing used contained two aspects - self-efficacy and sense of meaning. Only

self-efficacy significantly mediated the association between PSMU and wellbeing, suggesting that

PSMU may lead to a lack of confidence in individuals to improve their lives. However, it may not

impact the meaning one feels in their life. Secondly, a religious commitment was not associated with

PSMU and supported the idea of religiosity and spirituality as distinct concepts. The study also

suffered some limitations, most notably that a large proportion (41.6%) of participants identified as

Baptists and therefore contained a lack of religious diversity within the sample, potentially limiting

the generalisability of results. Each religion holds differing and nuanced beliefs that could

significantly affect how they interact with social media and the resulting consequences.

Furthermore, the measure of SMU was taken using the Facebook Intrusion Questionnaire. However, most young adults have several social media accounts on various platforms (Datareportal, 2021), and different social media sites may elicit alternative results from the ones observed in the study. Finally, the study was cross-sectional, and thus causality nor direction of association could be determined.

Is It All Bad? Conflicting Evidence

The research examined so far has focussed on the detrimental impacts SMU can have on wellbeing, as overwhelmingly, media coverage tends to focus on these negative aspects of SM. However, there is a body of evidence that contradicts these findings. Some studies report both positive and negative results within the same data set. Moreover, some studies have found positive impacts of SMU on various domains of wellbeing. The following section will highlight the positive or contradictory findings evident in the literature.

Mental Wellbeing (Taha Hinengaro)

In response to concerns from parents, policymakers and society about the potential negative consequences of SMU on mental wellbeing, Berryman et al. (2018) examined the relationship in a sample of 467 young adults with a mean age of just under 20. Outcome measures included loneliness, suicidal thoughts, empathy, and anxiety. Results suggested that time spent using social media was a poor predictor of all outcome measures, with hours spent online showing no significant correlation to any outcome measure. The researchers thus concluded that *how* users engage with social media is likely to be more important than merely the amount of time they spend on it, a point that will be expanded on later. Furthermore, longitudinal research by Jensen et al. (2019) found little evidence linking SMU and mental health symptoms. The study had several strengths, including a 14-day longitudinal design and 'ecological momentary assessment' (EMA), where participants were texted asking how they felt in the moment. EMA may facilitate better recall of experience than

retrospective self-reporting (Ellis et al., 2019). The researchers found little evidence for any

association between technology use and mental health symptoms with these more robust

methodological techniques. However, most of the sample (94%) consisted of early adolescents aged

12 to 15. Younger adolescents tend to use computers less, sleep more and experience lower levels of

anxiety and depression than older adolescents (Garmy et al., 2012).

Further longitudinal research by Heffer et al. (2019) measured SMU and wellbeing of 594

adolescents and 1,132 undergraduate students over two years and six years, respectively. Results

indicated that SMU did not predict any changes in depressive symptoms among both samples.

However, greater depressive symptoms did predict more SMU in adolescent girls exclusively. These

findings highlight that even with robust methodologies and study designs, the relationship between

SMU and mental wellbeing shows many nuances.

Several studies also show mixed or inconclusive results between SMU and mental wellbeing.

For example, Best et al. (2014) described mixed results in one of the first systematic reviews

investigating the association between SMU and mental health problems. The authors examined 43

papers between 2003 and 2013, finding contradictory results. The majority of papers investigated

found mixed or no effects of SMU on wellbeing; however, 13 of the 43 studies found beneficial

impacts, mainly relating to its impact on perceived social support. This highlights the potentially

positive impact of SM on wellbeing, in that users appear to feel supported in their online social

networks. The researchers also noted that several studies reported adverse effects of SMU on

depression and social isolation. The Best et al. review foreshadowed future research in that results

are contradictory and nuanced.

Baker and Algorta (2016) conducted a different systematic review of 30 quantitative studies

comprising 35,044 participants from 14 countries, including the Philippines, Turkey, Australia and

Korea. The authors examined the relationship between SMU and depression, using mostly self-rated

outcome measures. The main finding of this review echoed the Berryman et al. (2018) notion that

the way users engage with SM may be more important than simply time spent, finding that social

media use may elicit both positive and negative impacts on depressive symptoms. They suggest that

future research focus on mediators and moderators to better understand the relationship.

Specifically, the authors suggest that social comparison and rumination are two key variables to

consider in order to better understand how users' behaviour on SM influences wellbeing outcomes.

Another largely cited systematic review by Seabrook et al. (2016) looked at SMU and

wellbeing outcomes in 70 studies on young people. While the Baker & Algorta review looked

specifically at depression as an outcome measure in quantitative studies only, Seabrook et al. (2016)

examined both depression and anxiety as outcome measures and included mixed methodology

studies. Similarly to Baker & Algorta, Seabrook et al. found benefits of SMU relating to social support

and social connectedness. However, social comparison was identified as a mediating factor between

SMU and mental health issues. The Seabrook et al. findings suggest that the quality of social

interactions determines whether SMU leads to a positive or negative impact on the user. Aspects of

social wellbeing, including social connectedness and social comparison experienced through social

media platforms, may therefore be inherently tied to mental wellbeing. Moreover, the Seabrook et

al. results concur with Berryman et al. (2018) that how users engage with social media is more

important than the time spent on it. The overarching idea that these reviews present is that the

relationship between social media use and wellbeing outcomes is complex and highly nuanced, with

more methodologically robust research needed to understand better the mechanisms around how

SM impacts wellbeing.

Recent longitudinal research by Coyne et al. (2020) echoed these notions of complexity in a

study measuring 487 adolescents' time spent using social media and levels of depression and anxiety

over eight years, between the ages of 13 and 20. Crucially, the researchers analysed both between-

subject and within-subject models. Between-subject models compare groups of participants to infer

causality (Charness et al., 2012). In contrast, a within-subject design has each participant exposed to

multiple conditions. In the Coyne et al. study, the researchers measured both methods by comparing

groups that used social media more or less and individual participants' fluctuations in social media

usage each year and tracking how that impacted their levels of depression and anxiety. Results from

the between-subjects design were consistent with previous research - those who used more social

media reported higher levels of depression and anxiety. However, within-subject analyses revealed

no association between individual fluctuations in SMU and mental health outcomes across the eight

years. The authors thus conclude that there may be other factors at play influencing this

relationship. Although the Coyne et al. study provides some novel insights, it is limited in that the

study used a single, self-report measure of screen time. As mentioned, this measurement form is

inaccurate (Sewall et al., 2020). Secondly, the authors note that if screen time were under-reported,

it would be under-reported for everyone, and general patterns would remain. Whilst this could be

true, there is no way to confirm nor deny it. It could be entirely possible that only a certain portion

of the sample under (or over) reported their screen time, significantly impacting results. However,

the researchers acknowledge that objective measures of screen time did not exist during their study

and suggest that future studies utilise these advances in technology. Overall, this study contributed

an important nuance to social media research. While we can identify groups at risk of mental health

problems due to SMU, we cannot assume that SMU will predict mental health problems in all

individuals within this group.

Social Wellbeing (Taha Whānau)

Loneliness is another area of health in which contradictory findings have often been found.

As previously mentioned, the literature surrounding loneliness and SMU is in its early stages, and

much remains unknown. While the previously mentioned research examined the negative impacts

of SMU on loneliness, other literature has found contrasting results. For example, Lou et al. (2012)

looked at differences between Facebook and non-Facebook users' levels of loneliness in a cross-

sectional study of 340 undergraduate students. The researchers had participants take a survey that

included demographics, the UCLA Loneliness Scale (Russell, 1996) and two scales created specifically

for the study: the Motive for Using Facebook Scale and the Facebook Intensity Scale. Results showed

that the mean loneliness score was significantly lower in participants who had Facebook accounts than those who did not (p < .01). The authors posited that more time spent on Facebook leads to an increased social network and reduced feelings of loneliness, backing up Seabrook et al. (2016), who posit that the quality of social interactions determines whether SMU leads to a positive or negative impact on the user. Furthermore, the study found that Facebook intensity (time spent, friends, extent to which one is engaged) decreased loneliness, but not vice versa. This finding suggests a potential unidirectional relationship where SMU predicts changes in loneliness, a notion echoed by Marttila et al. (2021). While the Lou et al. (2012) study suggests SMU leads to lower loneliness, and Marttila et al. (2021) suggests SMU leads to higher loneliness, both have a key similarity: SMU predicts loneliness changes, not vice versa. However, as mentioned, the direction of the relationship between loneliness and SMU is widely contested, with mixed findings being reported (O'Day & Heimberg, 2021) and a lack of consensus on the topic. Regarding the Lou et al. (2012) study, the findings would need to be replicated using more robust longitudinal and experimental methods to make any causal claims. It is important to note that Facebook users have more than doubled since 2012 (Statista, 2021) and developments and changes to the site may mean that the Lou et al. study is now outdated. Moreover, while Facebook may provide a broader social network for individuals, a consequence of this is that individuals have an increasing number of peers to compare themselves to.

Experimental research by Deters and Mehl (2013) examined how posting on social media impacted loneliness. The authors had 86 undergraduate participants take a baseline measure of loneliness among other outcome variables, including depression and happiness. They then assigned participants in the experimental condition to post more updates than they usually do during the following week, while those in the control condition were given no instruction. The researchers found that those in the experimental condition who posted more had a significant reduction in loneliness (p = .04). Moreover, the other outcome variables were unaffected, with only loneliness implicated. Participants in the control condition experienced no change in loneliness. The authors

explain that participants' loneliness decreased by feeling more socially connected to family and

friends. This study is one of few experimental designs suggesting that SMU may positively impact

loneliness, and thus more research is needed to replicate these results using experimental designs.

Teppers et al. (2014) found mixed results in their longitudinal study of SMU and loneliness in

256 Belgian adolescents. The researchers administered a questionnaire to participants at two time

points, set five months apart. Motives for Facebook use and time spent on Facebook were

examined, and outcome measures investigated were parent and peer-related loneliness. Loneliness

was measured through the Loneliness and Aloneness Scale for Children and Adolescents (LACA;

Marcoen et al., 1987), which was measured on a 4-point Likert scale with items such as "I feel left

out by my parents" (parent-related loneliness) and "I feel sad because I have no friends" (peer-

related loneliness). The authors found that Facebook users had less peer-related loneliness than

non-Facebook users. They explain that this could be due to non-Facebook users limiting their social

network, thus leading to social isolation. However, it is also possible that more lonely individuals

were less likely to have a Facebook account due to their limited offline social network. This finding

highlights a methodological limitation of the study in that due to the observational nature, the

direction of the association cannot be ascertained. Experimental data would thus be useful in better

understanding the true nature of this relationship.

Yang (2016) conducted a survey study of 208 undergraduate students, in which participants

were asked about their Instagram usage, social comparison orientation (SCO) and loneliness. Results

indicated that Instagram interaction was associated with lower levels of loneliness, but only when

individuals displayed low levels of SCO. This finding highlights nuances within the research, showing

that SMU may reduce loneliness but only for users who are unlikely to compare themselves to

others. However, only Instagram was looked at in this study, and results may vary depending on

which SNS is used. Due to Instagram being largely photo-based, individuals may engage in more

social comparison through, for example, body image. Indeed, Pittman & Reich (2016) demonstrated

that the *type* of social media platform might influence loneliness outcomes. The authors proposed

that image-based SM platforms such as Instagram and Snapchat would decrease loneliness by

offering more intimacy than text-based SM platforms. Using a mixed-methods design, 263 young

adults filled out loneliness, happiness, and life satisfaction measures and were asked which SM

platforms they regularly use. Next, participants answered a series of questions about their attitudes

and the time spent on various SM platforms. In light of their predictions, the authors found that

loneliness was highest among those who used zero image-based platforms, followed by those who

used one image-based platform and lowest among those using two image-based platforms. Again,

this finding demonstrates the level of nuance involved in SM research and highlights that broad

statements and generalisations about SMU should be avoided.

Physical Wellbeing (Taha Tinana)

As noted above, while SMU appears to be negatively associated with physical activity, some

positive impacts have also been noted in the literature. For example, social media may be a tool for

those interested in physical wellbeing to engage with other like-minded individuals through joining

groups, following fitness/diet influencers, and using specific fitness/health apps to monitor their

progress. Research by Middelweerd et al. (2014) found that an average of five behaviour change

techniques that elicit increased physical activity were found on each app in a review of health and

fitness applications. However, these applications are specifically designed for those interested in

health and fitness, and thus only those with an initial interest in physical wellbeing may experience

their benefits.

Raggatt et al. (2018) looked at how 'fitspiration' impacted physical wellbeing, including

eating disorders and compulsive exercise behaviours. 'Fitspiration' is short for fitness inspiration and

refers to individuals seeking out fitness-related content on SM platforms (Tiggeman & Zaccardo,

2015). In their research, Raggatt et al. had 180 participants (84% female) complete a cross-sectional

survey, finding that participants reported both positive and negative impacts of fitspiration on their

wellbeing. Quantitative data showed that 17.7% of participants were classified as high risk for an

eating disorder, and 17.4% reported very high levels of psychological distress. Participants also answered open-ended questions about their experiences with fitspiration, with key benefits including social support and access to health information. However, participants also noted the potential negative influences on their wellbeing, including a false perception of healthy physical goals. Social support appears to be a key factor in increasing physical activity levels.

A systematic review by Mendonça et al. (2014) looked at 75 articles on social support and physical activity in young people, mostly between 2006 and 2011. Results indicated that social support was consistently and positively correlated to physical activity in cross-sectional and longitudinal data. However, a significant limitation of the study was that the majority of physical activity data was self-reported, with only 5.3% of studies using both objective and subjective measures of physical activity. The authors suggest that future interventions focus on social support to increase physical activity. Due to social media being a potential source of social support without needing in-person interaction, this may have important ramifications.

Experimental research by Rote et al. (2015) focussed on the role of social support in a sample of 63 female undergraduate students who were randomly allocated to one of two eight-week walking interventions. In both conditions, participants received weekly step goals tracked with a pedometer. In one condition, the women were assigned to a Facebook support group, in which they were asked to post information about their step counts and give and receive feedback on their progress. In the other condition, participants were not assigned to any support group. Results found that while both groups' step counts increased, those in the Facebook support group increased their steps per day significantly more than the standard intervention ($p < .01$), from 5295 to 12,472 steps/day. The results thus highlight the potential positive ramifications of using social media as a social support tool to enhance physical wellbeing. However, the study should be replicated with a more diverse sample as only young females were used in the study.

Spiritual Wellbeing (Taha Wairua)

As discussed earlier, research concerning how SMU impacts spiritual wellbeing is scarce. However, an opinion article by Rautela and Sharma (2019) acknowledges some potential positive impacts that social media could have on spiritual wellbeing. They posited that social media could enhance the meaning of people's lives at a low cost. They note that "*a person's day may start with reading inspirational and motivational quotes in some social networking platform like WhatsApp or Facebook. Beautiful imagery and breathtaking images can be posted in some platforms to remind people that they are surrounded with a beautiful world. In other words, directly or indirectly it will remind people to be awesome and live a healthy, peaceful, and happy life. This will also enhance harmony and quest for life in people. These are all the outcome of a principled life which is ultimately the motive of spirituality*" (p. 92). While the authors approached social media with an optimistic point of view, they may be underplaying the negative impacts that have been previously discussed. However, their observation that people will have the opportunity to engage with content that could positively impact their spirituality is valid.

Barnes and Hollingsworth (2018) investigated spiritual wellbeing among eight young homosexual black men in Tennessee/USA. The authors noted that this demographic was sought after "*because they are less frequently studied outside of an HIV/AIDS framework*" (p. 87). A 90-minute focus group with participants was conducted, and social media was identified as a particularly effective tool for maintaining spiritual wellbeing. The authors noted that virtual meetups and worship might provide safe spaces for such stigmatised groups, whereby individuals can remain anonymous and control their level of engagement. This research thus sheds light on the possibility of social media being a useful tool for stigmatised groups that help them meet their wellbeing needs.

Semi-experimental research by Hasanshahi & Mazaheri (2016) had 50 Iranian undergraduate students take a baseline measure of spiritual wellbeing and then enrol in ten educational lessons on spirituality using WhatsApp. Results showed a significant increase in spirituality ($p < .01$) after the educational lessons, independent of religious wellbeing. The research thus supports the idea of

spirituality and religiosity as separate constructs and suggests that social media can be a tool used to educate individuals on spiritual wellbeing. Furthermore, Rautela & Sharma (2019) note that as social media has no social, racial, or geographical boundaries, it may be a particularly efficient tool for educating individuals.

More research is needed in the spirituality field to better understand its relationship to social media. It could be possible that SMU enhances spirituality as SM provides individuals with opportunities to connect to others and the world in ways previously unattainable. Equally, SM may bombard individuals' senses and result in problematic use detrimental to the meaning of an individual's life. Moreover, both of these phenomena could occur at the same time.

Fear of Missing Out (FoMO)

A relatively new construct termed 'Fear of Missing Out' (FoMO) appears relevant to social media and its potential effects on wellbeing. This section will discuss previous literature on both the positive and negative impacts of SMU on experiences of FoMO. Przybylski and colleagues (2013) were the first to develop a FoMO scale, and they define it as "*a pervasive apprehension that others might be having rewarding experiences from which one is absent [and] is characterised by the desire to stay continually connected with what others are doing*" (p. 1841). The authors explain that FoMO may derive from a deficit in the need to be socially connected. Subsequently, social media may allow individuals experiencing FoMO to feel involved in social activities without physically being present. While FoMO does not fit directly onto the Te Whare Tapa Whā model, it could be said to be associated with social wellbeing, as the experience of FoMO is inherently social.

Many studies have suggested that FoMO predicts increases in social media use due to users feeling the need to check what others are doing (Blackwell et al., 2017; Dhir et al., 2018; Franchina et al., 2018; Hunt et al., 2018). However, few studies have looked at how SMU directly impacts FoMO. Due to the infancy of FoMO research, most studies have investigated the role of FoMO as a mediator between SMU and wellbeing outcomes such as depression, loneliness and social connectedness (Alt,

2018; Fang et al., 2020; Reer et al., 2019; Roberts & David, 2020). There have been mixed results

concerning the direct relationship between SMU and FoMO. For instance, Brown and & Kuss (2020)

found a significant decrease in FoMO after one week of social media abstinence in a sample of 61

participants aged between 20 and 49. Furthermore, the authors found a significant negative

relationship between the decrease in FoMO scores and increased social connectedness. They explain

that participants felt more socially connected due to their reduced FoMO. However, the broad age

range means these findings cannot be associated specifically with younger cohorts, although the

mean age of participants was 24.44. Different age groups appear to deal with abstinence differently

(Kuss et al., 2018), and thus studies should endeavour to separate these groups. Hunt et al. (2018)

also found reductions in FoMO after participants limited their social media use to 30 minutes per

day across Facebook, Instagram and Snapchat in their sample of 143 American undergraduate

students. While there was no significant difference in FoMO between the experimental and control

condition, there was a small significant reduction in FoMO from baseline to post-intervention in both

groups. The authors explain that this could be due to the self-monitoring aspect of the study, with

many participants reporting how conscious they were of how much time they spent on SM. Zhou et

al. (2021) ran a mixed-method study in which 65 participants were randomly allocated to either take

several two and a half hour breaks from social media over two weeks or not. They found that 90.9%

of participants in the experimental condition reported FoMO as the most negative feeling associated

with abstinence. However, participants also reported that as the intervention went on, their FoMO

was alleviated as they adjusted to abstaining.

Although some research shows reductions in FoMO when SM is limited, other studies have

found increases in FoMO. For example, experimental research by Eide et al. (2018) had 127

participants randomly assigned to either limit SM or not for three days. The authors found significant

increases in FoMO among participants in the experimental condition. However, the Eide et al. study

had participants hand their phones in, completely removing all smartphone use. This presumably

isolated participants from their peers and resulted in a reduced sense of safety. In contrast, studies

that allowed participants a moderated amount of time on SM found beneficial effects (Hunt et al.,

2018; Zhou et al., 2021), suggesting that FoMO may be alleviated by a reduced amount of time spent

on SM rather than complete abstinence. Overall, the relationship between SMU and FoMO is still in

its infancy, with mixed and complex results. More experimental research on the direct relationship

needs to be done, rather than investigating the role of FoMO as a mediator.

Sleep

Similarly to FoMO, it is not easy to map sleep precisely onto the Te Whare Tapa Whā model.

However, it is an essential component of both mental and physical health. Young people are

particularly impacted by sleep issues, with 39.4% of New Zealand university students reporting a

sleep problem for more than one month (Samaranayake et al., 2014). Social media use has been

linked to poor sleep outcomes (Woods & Scott, 2016), and thus young people may be particularly

impacted by sleep issues as they use social media more than other groups (Cain & Gradisar, 2010). In

the same way FoMO literature was discussed, I will examine research looking at both the positive

and negative impacts of SMU on sleep.

Some studies have looked at the role of sleep as a mediator between SMU and other

wellbeing outcomes. For example, He et al. (2020) found that participants who limited smartphone

use 30 minutes before bedtime had increased affect due to increases in sleep quality and quantity.

Other studies have looked at the direct relationship between sleep and SMU. A systematic review of

the relationship between SMU, sleep quality, and mental health in young adults found significant

associations between SMU and sleep quality in more than half of the 42 studies examined (Alonzo et

al., 2020). The researchers found that volume and frequency of SMU were positively correlated with

poor sleep quality in studies across various cultures and countries, including China, the US,

Bangladesh, and Switzerland. One of these studies (Levenson et al., 2016) examined a nationally

representative sample of 19-32-year-old American participants. The authors found that individuals

with higher SMU volume and frequency were significantly more likely to experience sleep

disturbances. Another study by Lemola et al. (2015) found that night-time SMU was negatively

correlated with sleep duration and positively correlated with sleep difficulties in a sample of Swiss

high school students. Additionally, Woods and Scott (2016) revealed that night-time SMU was

predictive of poor sleep, whereas overall SMU was not. Many of these studies suffer a common

limitation of being cross-sectional, making it difficult to ascertain the direction of effect. In other

words, SMU may cause poorer sleep, but equally, those who sleep more poorly may use SM to cope

with insomnia. Therefore, more recent research has attempted to account for this by employing

experimental designs. A recent study by Graham et al. (2021) had 132 undergraduate participants

limit social media for a week or continue using it as normal. The researchers found that participants

in the experimental condition saw improvements in wellbeing due to improvements in sleep quality.

Similarly, Hughes and Burke (2018) had experimental participants abstain from using their

smartphone in the bedroom for one week, while a control group were allowed the device. A key

theme that emerged in their analysis was the report that sleep improved among experimental

participants, although no quantitative measure for sleep was examined.

Cain & Gradisar (2010) note that various biological processes may be responsible for the

poor sleep associated with SMU. The authors explain that late-night use of social media may

increase physiological arousal due to the bright lights of smartphones. Consequently, this may delay

melatonin production, a hormone associated with controlling the sleep-wake cycle (Dawson & Encel,

1993). The release of melatonin induces feelings of sleepiness, and the blue light from smartphones

may suppress this release. Additionally, the use of social media at night may alter the sleep routine

of an individual, resulting in a later bedtime and modified circadian rhythm, leading to disturbed

sleep (Higuchi et al., 2005). Levenson et al. (2016) suggest a bidirectional effect between SMU and

sleep. They note that difficulty sleeping may increase SMU, leading to more difficulty sleeping.

Literature shows that adolescents use various forms of media to assist them to sleep, such as games,

television, music and reading (Eggermont & Van den Bulck, 2006). However, social media may be

more interactive, engaging and stimulating than these other activities.

Methodological Flaws in SMU and Wellbeing Literature

The above literature review highlighted key studies and research examining the relationship between social media and wellbeing in four domains: mental, social, physical, and spiritual wellbeing, as well as FoMO and sleep (both of which frequently feature in SM research). However, many of the earlier mentioned studies contain several methodological flaws and limitations. In a narrative review of reviews, Orben (2020) noted that over 80 meta-analyses and systematic reviews have examined the relationship between digital technology and psychological wellbeing. Orben comments that while associations exist between social media and psychological wellbeing, the negative correlations are "*very small*" (p. 407). Furthermore, the direction of the relationship is still unclear, with correlations existing in both directions. A key finding that Orben comments on is the overwhelming amount of cross-sectional research and methodological limitations in the studies conducted thus far. The following section summarises some of the major methodological flaws and explains why they matter in how we come to interpret the literature.

Problems with Cross-Sectional Research

As noted earlier, much of the research concerning social media use and wellbeing has used cross-sectional designs. This methodology is ideal for measuring large populations and variables such as age, race and gender with relative ease and pace. Secondly, cross-sectional designs do not require any manipulation, thus making them easy for researchers to use, with minimal burden on participants. However, Orben (2020) notes that we should be cautious about drawing conclusions from cross-sectional data "*because there are a range of third factors that can influence both variables, and there have been sources of bias not addressed properly in a literature that is largely cross-sectional and exploratory*" (p. 410). Furthermore, it is difficult to establish the direction of relationships when using cross-sectional designs. For example, in the context of social media and mental wellbeing research, it could be true that SMU causes psychological distress. However, it could be equally valid that individuals experiencing psychological distress use social media as a

coping mechanism or distraction. Within longitudinal studies, other issues arise. It is difficult to know

what an appropriate length of time is to study a given group, and the longer the study lasts, the

more burden is put on participants. Thus, a portion of participants is likely to drop out during the

study. Nevertheless, research in this area should use longitudinal designs to help determine long

term trends as opposed to 'snapshots' in time.

A methodology that is useful in establishing causation is experimental design. This study

design involves manipulating the conditions of one group of participants whilst also measuring a

control group to examine differences and establish cause and effect (Kirk, 2012). While experimental

research is useful in this sense, it does not come without its limitations. For example, sample sizes

are often smaller as the 'burden' on participants is higher because participants usually have to 'do'

something. For example, restricting social media use or attending a laboratory session to undertake

a social media-related task. Due to manipulated conditions, experimental research can create

unrealistic situations or hold no practical significance in the real world. Furthermore, it often

requires more funding to cover participant incentives and research materials. While no study design

comes without flaws, longitudinal and experimental designs should be used when possible in social

media research due to the overwhelming amount of cross-sectional research in the area and the lack

of causal claims.

Problems with Measuring SMU

Another problem evident in much of the research is the lack of objective measures. A

particular concern evident in many studies is how exposure/time on SM is captured. It was not until

2018 that Apple released the screen time function, where users could track and limit time spent on

their devices (Apple, 2018). Thus, reviews on the relationship between SMU and wellbeing

conducted before 2018 relied on self-reports of users' time spent on social media. Sewall et al.

(2020) took advantage of the new screen time function and compared estimated use versus actual

use in 325 iPhone users. Results indicated that participants mis estimated their iPhone and SMU by

19.1 and 12.2 hours, respectively. Therefore, the results show a significant incongruence between subjective and objective reports of social media usage. The researchers explain that because actual use and estimated use are distinct concepts, they will have different correlations to wellbeing. Indeed, the researchers found that *estimated* weekly use was correlated four times as strongly with depression as the correlation between depression and *actual* weekly use. Therefore, *estimated* weekly use shows a concerning, significant association. In contrast, *actual* weekly use showed a weaker correlation. The authors note the ramifications of these results, that *"it may be that increases in actual SMU are prospectively associated with decreases in wellbeing, thus implicating actual SMU as a potential risk factor. Alternatively, decreases in wellbeing may be associated with increased perceived SMU, which leads to higher estimates of use—even though the amount of actual SMU has not changed. This latter scenario is particularly concerning, as we would erroneously conclude that increased SMU is related to decreased wellbeing, even though the 'true' association between actual SMU and wellbeing is null"* (p. 392). Therefore, this methodological issue can have crucial impacts on the quality of research and how results are interpreted.

False Positives

One other common methodological issue is small effect sizes or false positives. A common issue in psychological research, more broadly, occurs when a statistically significant result holds no practical significance or when researchers run various analyses until one 'works' (Simmons et al., 2011). Orben and Przybylski (2019) demonstrated that statistical significance might hold little practical value within social media research. When comparing correlations of SMU and depression, the researchers found that eating potatoes had a similar correlation to wellbeing as technology use did. Furthermore, wearing glasses was *more* negatively correlated with wellbeing than technology use. These results highlight the need to look beyond statistical significance and carefully analyse what results might mean practically.

Types of Social Media Use - Passive vs. Active

The above sections have reviewed some of the methodological limitations identified in the research on SMU and wellbeing. In light of the literature containing many unknowns, researchers have looked more closely at how users engage with SM to better understand the relationship between SMU and wellbeing. An important distinction has recently emerged distinguishing types of social media use, specifically *passive* and *active* forms of social media. Burke et al. (2010) note that *active SMU* includes broadcasting activities, including updating statuses and posting *content* to social media sites and direct one-to-one exchanges via messaging and calling. In contrast, they describe *passive SMU* as reading and viewing content without engaging with it (often called 'scrolling', with frequent refreshing of the content to see what else has been posted). Recent systematic reviews have commented that due to the complex nature of social media research, scholars must strive to conduct high-quality studies accounting for such nuances as passive and active uses of social media (Berryman et al., 2018; Coyne et al., 2020; Keles et al., 2020; Orben 2020). Generally, active SMU has been linked with positive effects on wellbeing due to increased social support and connectedness (Verduyn et al., 2017). Conversely, passive SMU has been linked to reductions in wellbeing, explained through mediators such as social comparison and envy (Burke et al., 2010; Frison & Eggermont, 2015).

Similarly to other SM literature, much of the research on passive and active SMU has used cross-sectional designs (Krasnova et al., 2013; Shaw et al., 2015; Tandoc et al., 2015). One of the more significant cross-sectional studies was the aforementioned Yang (2016) study, which found associations between Instagram use and loneliness, measured using the UCLA Loneliness Scale (Russell, 1996). Yang builds on Burke et al. (2010) research by measuring three categories of Instagram use: active, passive and *interactive*. Yang posits that active use pertains to *"actively producing content on SNSs, but the content is not directed to specific individuals (e.g., updating status or broadcasting information on SNSs without tagging specific viewers)"* (p. 704). In contrast, *interactive* use involves commenting on posts and messaging others. Finally, passive use is

characterised by browsing content without any level of engagement. Yang's findings were consistent with previous research, as interactive and active use were related to lower loneliness, and passive use was associated with higher loneliness. Yang adds nuance to the notion of passive and active uses of social media by adding an interactive category. This more detailed approach may help scholars to better understand how the different ways users engage with SM impacts their wellbeing. However, the results should be interpreted with caution due to the study's cross-sectional design. Furthermore, passive, active and interactive uses of social media may impact different areas of wellbeing differently. In addition, Instagram is only one of the social media platforms available (and most people who use social media tend to use several of them daily), and participants may have responded differently on other platforms. The findings highlight the complex and nuanced nature of SM research and illuminate the need for researchers to account for such complexity.

In another correlation study, Frison and Eggermont (2015) examined how passive and active Facebook use influences depressed mood in 910 Belgian adolescents. Participants were recruited from various high schools in Belgium and filled out a short survey about their Facebook use, perceived online support and depressed mood. In line with their predictions and previous findings, results showed a significant positive correlation between passive Facebook use and depressed mood. However, a novel finding of the study was that this correlation only applied to females. The authors explain that this may be due to younger females being more attracted to passive Facebook activities (McAndrew & Jeong, 2012) and more likely to compare to others on Facebook (Haferkamp et al., 2012). Although this gender difference was a significant finding, the study was still cross-sectional by design. The authors acknowledged the need for longitudinal and experimental research on passive and active SMU to establish cause and effect better.

In a critical review of how SMU impacts subjective wellbeing, Verduyn et al. (2017) identified the need for future research to focus on experimental and longitudinal designs, as cross-sectional studies "*create more confusion than clarity, further amplified by the media coverage that they have*

received" (p. 294). Therefore, I will review some relevant longitudinal and experimental literature looking at passive and active SMU and how these different use patterns affect wellbeing.

Longitudinal Research on Passive vs. Active SMU

In longitudinal research designs, various studies have benefited from examining how active and passive SMU impacts wellbeing over time. In one of the first and most ground-breaking longitudinal studies, the previously mentioned Kross et al. (2013) study used an experience sampling method to text message participants five times per day for two weeks. The authors measured participants' overall SMU, momentary affective wellbeing, and life satisfaction. Results showed that Facebook use predicted declines in both dependent variables. Furthermore, when the researchers substituted direct social interaction for Facebook use, no reduction in wellbeing was observed. This finding may suggest that the *passive* nature of Facebook use was responsible for the observed wellbeing changes, as interactions with others did not predict wellbeing changes. However, these interactions were in person, and online interactions may have elicited different results. In a similar study, Wenninger et al. (2014) had 80 German adolescents undertake a one-week diary study. Participants reported active and passive SMU and affective wellbeing measured through a self-esteem and satisfaction with life scale. The authors found that actively using Facebook was positively correlated with life satisfaction, in line with previous research. In contrast, passive Facebook use was associated with decreases in life satisfaction. However, the study suffered limitations, including a small sample size and a narrow scope, as only Facebook use was investigated rather than several SNS.

Verduyn et al. (2015) utilised longitudinal and experimental design techniques to investigate active and passive Facebook use and wellbeing. Specifically, the researchers conducted two studies in their paper, one of which was experimental and is discussed in the next section. In the longitudinal study, 80 young adults were recruited. The researchers first took a baseline score of various wellbeing outcomes, including life satisfaction, loneliness, self-esteem and depression. They

then texted participants five times per day for six days with a link to a survey that assessed affective

wellbeing, envy, active Facebook usage, passive Facebook usage, direct social interaction, and non-

Facebook online social network usage. 77 of the original 80 participants then returned to fill out the

initial survey once more. Findings revealed that passive Facebook use predicted wellbeing changes;

however, the reverse pathway was not true. That is, changes in wellbeing did not predict changes in

their passive Facebook use. This is crucial, as the study can infer the direction of the effect, that

passive Facebook use likely causes changes in wellbeing. Furthermore, the study found that

participants used Facebook passively around 50% more than they used it actively. Participants,

therefore, appeared to engage with social media in a way that is harmful to their wellbeing

(passively) more often than ways that seem to impact them positively (actively). Like many early

studies in this area, the Verduyn et al. findings are limited as only Facebook was investigated.

Experimental Research on Passive vs. Active SMU

In addition to the longitudinal study mentioned, Verduyn et al. (2015) used an experimental

design in a second study to examine passive and active SMU. They assigned 84 undergraduate

students in a laboratory setting to one of two conditions: either use Facebook passively or actively

for ten minutes. Participants firstly took a baseline measure in which they were asked, 'How do you

feel right now?' (0 = *very negative,* 100 = *very positive*) and 'How lonely do you feel right now?' (0 =

not at all lonely, 100 = *very lonely*). They also filled out a measure of life satisfaction and then either

passively or actively used Facebook for ten minutes. A methodological strength was that

unbeknownst to the participants, the researchers viewed participants' screens to ensure they

complied with instructions. Those who did not comply were subsequently excluded from the

analysis. Participants then filled out the baseline measures again immediately after the laboratory

session and once again at 9 pm that night. Findings revealed that neither group showed any changes

in wellbeing immediately after the intervention. However, participants who passively used Facebook

experienced a significant decline in affective wellbeing scores in the night-time assessment. Verduyn

et al. provide a rationale for why they observed a delayed effect of passive use on wellbeing. They posit that users may "*need time to reflect on the information they passively consume on Facebook for envy to build in ways that ultimately impact the way they feel*" (p. 487). In contrast, those in the active condition showed no significant change at any point. These important findings provided the first experimental evidence that the *way* users engage with social media can differentially impact their wellbeing. However, the study was not without limitations. For example, the authors only investigated Facebook use rather than multiple social media platforms. Furthermore, participants were predominately white college students, and thus findings cannot be generalised to broader populations. Overall, the study provided novel results on the complexity of SMU and a base from which future research can develop.

Other early experimental research by Fardouly et al. (2015) examined how passive Facebook use impacted women's body image and mood. 122 female participants were randomly assigned to spend 10 minutes browsing Facebook passively, reading a magazine online, or browsing a neutral control website. Results indicated that those who passively used Facebook reported lower mood than the control conditions. However, the authors found no relationship between passive Facebook use and body image. The study experienced similar flaws to Verduyn et al. in that the only social media platform investigated was Facebook. Research suggests that body image issues may be more impacted by passive photo-sharing platforms like Instagram (Brown & Tiggeman, 2016; Cohen et al., 2017). Thus, the study could not capture how these other platforms may influence body image.

Critical View of Active vs. Passive SM Use Dichotomy

A recent critical review by Valkenburg et al. (2021) has called for the abandonment of the active-passive dichotomy in response to studies finding that passive use may not be all negative, and active use may not be entirely positive. For example, Meier et al. (2020) had participants look at weak or strong evocative nature and travel photos of a made-up Instagram user. Evocative images are novel and aesthetically pleasing (Thrash et al., 2014). The authors created a non-gendered user

who appeared average in terms of followers, and it was made clear that they were not an influencer. Participants were then randomly assigned to either the weak or strong evocative photos condition and measured on inspiration, upward social comparison, envy, affective wellbeing and vitality after viewing the photos. The researchers provided the first causal evidence that *"more evocative, visually optimised Instagram travel postings do elicit not only upward comparison but also inspiration"* (p. 17). Moreover, the correlational results of the study indicated that viewing nature and travel photos were associated with increases in affective wellbeing. The results, therefore, suggest that passively viewing content of this kind may result in positive impacts on wellbeing. Furthermore, the findings conflict with the large body of literature suggesting adverse effects of passive SMU. However, the specific content that an individual passively views may have differential impacts on wellbeing. For example, passively scrolling through inspirational material or other subjectively positive content may have different impacts than simply looking at photos of peers and celebrities. These nuances highlight the need for further within-person designs to assess intraindividual differences. A limitation of the Meier et al. study is that only Instagram was used rather than a broader range of social media platforms. Future research could add to these findings by using a within-subjects method and investigating how evocative photos on other social media sites impact an individual's wellbeing.

Another point raised by Valkenburg et al. (2021) is that aspects of active SMU can result in negative implications for users and thus lead to decreases rather than increases in wellbeing. While research supports an association between passive SMU and declines in wellbeing, Meier et al. demonstrate that passive SM may also elicit positive reactions such as inspiration. Equally, while active SMU can provide individuals with increased social support and connectedness, it could be used for cyberbullying or to spread moral outrage. The authors thus concluded that subtypes of both active and passive SMU must be developed to better understand the exact mechanisms by which wellbeing is impacted. While active and passive SMU provide nuances that extend beyond time spent on social media, further research must delve deeper.

What Happens When SMU is Restricted? Current Findings and Future Directions

Many young adults have multiple social media accounts across various platforms. In New Zealand, the average number of accounts to hold across social media sites is seven (Auxier & Anderson, 2021; Datareportal, 2021). Building on the previously mentioned Facebook studies, and in light of the expansion of SMU across different platforms, research on how active and passive SMU influences wellbeing has broadened its scope to include a wider range of social media sites. Much of this research has involved experimental designs in which time spent using social media is restricted due to scholars calling for more research of this kind to establish causality and direction of effects. While some studies had participants completely abstain from SMU, others asked the respondents to limit their time using it.

The first experimental studies limiting how participants engaged with SM involved restriction of Facebook use, due to it being the most popular social media platform at the time (Duggan et al., 2014). For example, Tobin et al. (2014) ran two experimental studies limiting 79 Australian undergraduate students' Facebook feedback. In the first study, participants were either allowed or not allowed to share information on Facebook for 48 hours. The authors found that participants who were not permitted to share information reported lower belonging and meaningful existence. In the second study, participants either received feedback on their status updates or did not. The participants who did not receive any feedback subsequently reported lower self-esteem, control, and meaningful existence. The results were thus able to infer a causality that not receiving feedback on Facebook resulted in lower belonging than those who did receive feedback.

Similar early experimental research by Sagioglou and Greitemeyer (2014) had 263 participants assigned to one of three conditions: browsing Facebook for 20 minutes, browsing the internet (excluding SM sites) for 20 minutes and a control group. The authors used the 20-item Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) to measure mood. Results showed that those in the Facebook condition reported lower mood than those in the other

conditions. However, this study used a range of American citizens with a mean age of 33 and thus does not relate specifically to younger cohorts.

Tromholt (2016) had a sample of 1,095 Danish individuals randomly assigned to either completely abstain from Facebook or to continue using it as usual for one week. Results showed that those who abstained from Facebook reported significantly higher life satisfaction and emotional wellbeing. The observed improvements in wellbeing were most pronounced for those who passively used Facebook more. The mean age of participants in the study was 34, and 86% of participants were female, thus limiting generalisability. The study was also limited in scope as Facebook was the only form of SM being limited. Consequently, participants could have compensated by spending more time on other popular SM platforms.

Since the initial Facebook studies, researchers have noted the rise of other social media sites such as Instagram, Snapchat, and Twitter. Consequently, experimental research has begun to include these different platforms. For example, Hunt et al. (2018) conducted a significant experimental study that gained much attention. The authors randomly assigned 143 undergraduate students from The University of Pennsylvania to continue using SM as usual or limit their Facebook, Instagram, and Snapchat use to 10 minutes per day, per platform, for three weeks. The researchers found that the experimental group that limited the various SM platforms reported significantly lower levels of depression and loneliness compared to the group who continued to use social media as usual. This research improves on cross-sectional data by employing an experimental design to establish causation and direction - that reducing how much an individual uses social media may cause increases in various areas of wellbeing. Furthermore, a novel aspect of the research was that it included several social media platforms rather than just Facebook and included multiple outcome measures in various domains of wellbeing. Interestingly, Hunt et al. found that participants who had high baseline levels of depression experienced the most significant improvement in depression scores. Those with mild depressive symptoms at baseline also reported improvements, but to a lesser extent than those with higher baseline levels. However, other areas of wellbeing were

unaffected by the intervention. Social support, self-esteem and psychological wellbeing remained

unaltered. The researchers suggest that these measures could be "truly unaffected by social media"

(p. 764). However, this seems unlikely given the large body of literature suggesting that social

support (Seabrook et al., 2016), self-esteem (Andreassen et al., 2017) and psychological wellbeing

(Marino et al., 2018) show associations with SMU in the cross-sectional data. The authors also

comment that the 10-minute time limit of their intervention could have been too short or long to

elicit any change. However, the allowance of at least *some* time to be spent on social media rather

than complete abstinence may have contributed to the observed improvements in wellbeing. The

authors acknowledge that many individuals use social media to stay in touch with family and friends,

organise events, read news and arrange meeting times. Therefore, it was unreasonable to expect

participants to eliminate these important communication lines entirely. In fact, this online

connection to others may have provided cause for improvement in wellbeing. The study also

suffered some important limitations. Although participants were instructed and encouraged to limit

their social media to 10 minutes per platform, there was no way to control whether participants did

this. The authors report that some individuals in the experimental condition exceeded the limit.

Additionally, the researchers only measured social media use on smartphones. Consequently, they

could not control whether participants accessed social media through other devices such as laptops

or tablets. However, considering that recent data found that 92.6% of the global population access

the internet via mobile devices (Statista, 2021a), it is unlikely that this would be a significant issue.

Another limitation of the study is that it only limited three social media platforms. While this

improves previous research, participants may still have replaced these platforms with others. The

authors acknowledge this, reporting that some participants spent significantly more time on dating

apps due to limiting other social media platforms.

A recent systematic review by Eriksen (2020) investigated the effects of restricting SMU on

subjective wellbeing. After an initial 3575 studies were identified through database searching, a total

of 19 studies made it through the screening process and were examined, pooling a total of 5101

participants with a mean age of 27.44. The studies were conducted in various countries, including

the US, UK, China, Russia, Italy, Denmark, Germany, Norway, United Arab Emirates, and Australia.

Notably, none had been conducted in New Zealand. Additionally, most studies used student

populations; however, some did recruit from general populations. The examined studies looked at

various outcomes, including loneliness, mental wellbeing, life satisfaction, depression and anxiety,

using several different scales to measure these. Of the 19 studies examined, Eriksen reported 12

significantly increased subjective wellbeing after restricting SMU. In contrast, two resulted in

adverse effects, and five reported no significant findings. However, of the 12 studies that found

benefits of restriction, most revealed small effect sizes. While effect sizes were primarily small,

Eriksen points to the argument by Twenge and Campbell (2019), who note that small effect sizes

may have relevance when considered on a large scale. Crucially, Eriksen reports that the studies

which included a reduction or moderation of SMU or situationally specific restrictions (rather than

total abstinence) all revealed beneficial effects. These results indicate that rather than completely

eliminating social media, positive changes to wellbeing may be best elicited through reduction and

moderation of SMU. This notion is echoed by Twenge et al. (2018b), who found that *"adolescents*

spending a small amount of time on electronic communication were the happiest" (p.1) in a review of

nationally representative surveys of 1.1 million adolescents between 1991 and 2016.

        Eriksen also found several nuances in the review. For example, abstinence may be more

effective for heavy SM users than moderate or light users. However, heavy users may be more

impacted by the initial abstinence than moderate or light users, putting them at higher risk of

relapse or dropping out of studies. Eriksen thus concludes that the benefits of restricting SMU *"were*

most pronounced through an approach of moderated use rather than complete abstinence" (p. 1).

Conclusions from Literature to Date

        Research findings concerning social media use and wellbeing outcomes present a complex

picture. While there is ample research evidence about SMU and its negative impact on wellbeing,

some other literature points to positive, neutral or mixed effects. Researchers have employed

various techniques to study the relationship, including cross-sectional, longitudinal, and

experimental designs. Many scholars have commented that longitudinal and experimental designs

should be used more consistently in the future to better understand the relationship. Looking at

social media use as passive and active may help better understand how users' behaviour on social

media platforms impacts wellbeing. In particular, experimental designs that restrict SMU may help

better understand the causal relationship between SM and wellbeing outcomes.

The Present Study: Rationale, Objectives and Addressing Previous Limitations

The objective of the present study is to assess the feasibility and effect of limiting daily use

of passive social media on wellbeing. In this exploratory pilot study, we will ask participants to limit

their passive social media use to approximately 15 minutes per day for two weeks to investigate the

feasibility of running such an intervention study with a sample of young New Zealand adults, to

study the acceptability of such approach and to explore if it has a consequential effect on wellbeing.

We therefore propose three main research questions:

1) Is it feasible to suggest self-limiting of social media for two weeks?

2) Do participants find such an intervention acceptable?

3) What are the health and wellbeing outcomes for those who persist with the intervention?

This will add to the current literature in several ways. Firstly, we will be using an

experimental study design. One of the most common limitations of previous research in this area is

the overwhelming amount of cross-sectional data and lack of experimental and longitudinal

research, with scholars calling for research to focus on the latter (Verduyn et al., 2017; Keles et al.,

2020; Orben, 2020). The focus of the current study is to examine the effect of limiting *passive* SMU

to 15 minutes per day for two weeks. We have chosen 15 minutes per day in light of the fact that

current research suggests moderation to be more effective than abstinence (Eriksen, 2020).

Additionally, most research suggests that passive rather than active forms of social media cause

well-being declines, so it is reasonable to ask participants to limit this aspect of their SM use. Active

forms of SM such as messaging applications may be necessary for participants to stay in touch with

family and friends, and arrange meeting times and events. To restrict them from using such

applications would put an unnecessary burden on the participant.

Another gap in the research we aim to address is the lack of within-person studies. The

majority of research in the area has examined between-subject studies, which have found, at best,

small effect sizes (Orben, 2020). Our study will address this by having a between-group and within-

person analysis. By measuring the SMU and associated changes in the wellbeing of each individual in

the study, we will account for individual differences in the sample, rather than just comparing

between the experimental and control group. We will randomly allocate participants to one of two

conditions to remove self-selection bias. Randomisation is important as it *"makes it more likely that*

there will be balancing of baseline systematic differences between intervention groups with regard to

known and unknown factors—such as age, sex, disease activity, and duration of disease—that may

affect the outcome" (Akobeng, 2005, p.841)

We will address another common limitation of previous research by using objective

measures of how much time people spend on SM. To date, many studies have used self-report

measures of SMU. Our study will ask participants to send a screenshot of their screen time during

the intervention to tally up the time spent using SM passively.

We will ask participants to limit *all* passive forms of social media rather than one or two SM

applications. The majority of SM intervention studies have limited Facebook use only. However, in

some studies, participants have reported compensating for this by using other passive SMU,

including Instagram and Twitter. Our study, therefore, extends on previous research, as no study

thus far has limited all aspects of passive SMU.

We will use mixed methods to obtain both quantitative (experimental) and qualitative data

from the participants. We will use a brief self-reported online questionnaire (designed for ease and

minimum burden) to assess various aspects of wellbeing and invite a sub-sample of participants to a

brief exit interview to investigate how they coped and what they have observed about their SMU during the study. Using this mixed-method design, we aim to gather quantitative data to measure the effectiveness of the intervention and qualitative data to provide further detailed insights into participants' experience of the intervention.

Finally, we will be guided by the Te Whare Tapa Whā model of health to assess wellbeing more holistically than many previous studies. We will aim to account for physical, mental, social and spiritual health as well as FoMO and sleep, which are both constructs related to general wellbeing. Using the Te Whare Tapa Whā model to examine health is a step forward towards using more culturally appropriate outcome measures in Aotearoa/New Zealand.

Chapter 2: Methodology

Recruitment and Procedure

Recruitment Methods

Participants were recruited through various methods, including word of mouth, Facebook and Instagram posts to community pages, electronic announcements to undergraduate psychology students at The University of Auckland (distributed by a course coordinator) and flyers posted around the university campus. A copy of the flyer used can be found in Appendix A.

Inclusion and Exclusion Criteria

Recruitment criteria were kept to a minimum given the exploratory aim of the study. Inclusion criteria were stipulated as volunteers aged between 16 and 25 years old who use social media daily and wanted to take a break from social media. We sought those who had a reasonable level of English language competency (implied by responding to the recruitment material). Exclusion criteria included individuals who used social media for work purposes ('influencers', advertisers, social media content creators etc.).

Sample Size

We aimed to recruit approximately 40-50 participants in total, providing 20-25 participants per 'arm' of the study. No formal power calculation was undertaken due to this study's exploratory and pilot nature. A minimum sample size of 40 was deemed appropriate to provide summary statistics and meaningful group comparison. We planned to reach approximately ten participants to participate in an exit interview about their experiences of limiting passive social media during the study.

Ethics and Informed Consent

Ethical approval was obtained from the Auckland Health Research Ethics Committee

(AHREC) on 16/07/2021 for three years (reference number: AH22545). Those interested in the study

were first asked to email the researcher (CW). CW then contacted them and sent them an electronic

Participation Information Sheet (PIS) and arranged a time for a short Zoom briefing session, usually

taking around five to ten minutes. A copy of the PIS can be found in Appendix B. CW explained the

study and the processes during the Zoom session, answered any questions, and confirmed the

participant's willingness to participate. The participant was then asked to complete an online

consent form (through Google Forms). Completing this constituted written informed consent. A copy

of the online consent form can be found in Appendix C.

Study Design and Procedure

Once participants signed the consent form (through Google Forms), they were sent an email

link to an online questionnaire on Qualtrics (see Appendix D), where they completed a baseline

questionnaire (details below). Qualtrics then randomly assigned a participant to one of two

conditions: "Digital Cleanse" or "Waitlist". Each condition is described below. The baseline

questionnaire was sent for completion on a Thursday or Friday of a given week, and participants

were instructed to begin the study on the following Monday. This was done to collect screen time as

accurately as possible, as the screen time function records a week from Monday to Sunday. The

baseline for both groups (DC/WL) in this study is called 'Time 1'.

Digital Cleanse: Participants were asked to limit their passive social media use to 15 minutes per day

for two weeks. Passive use was defined as scrolling through news feeds and viewing content without

direct exchange. Use of messaging services such as Facebook Messenger and WhatsApp was not

included as passive use.

Waitlist: Participants were asked to wait for 14 days before beginning the Digital Cleanse.

Participants were instructed that they were on a two-week waitlist to begin their intervention.

During the two weeks, they were instructed to continue using social media as usual. After two weeks, they were sent an email reminder to begin their intervention (instructions on what to do were provided in detail, in the same way as those assigned the Digital Cleanse in the first instance).

Participants in the Digital Cleanse were then given simple to follow instructions on how to limit their passive social media use to 15 minutes per day, including an explanation of what constituted passive use. After each week of the intervention, the Digital Cleanse group were emailed and asked to send a screenshot (from their phone) of their social media consumption directly to the researcher (CW). After the full 14 days had elapsed from Time 1, the Digital Cleanse group were emailed and asked to complete their post-intervention outcome measures (Time 2). The experimental part of the study ended at this point for those assigned to the Digital Cleanse. All data was collected online using Qualtrics software licensed to the University of Auckland.

14 days after their baseline assessment, those in the Waitlist condition were then asked to complete their wellbeing assessment again on Qualtrics and commence their Digital Cleanse for the next 14 days. This time point is called 'Time 2'. The protocol for those initially assigned to Waitlist followed the same procedure outlined above for the Digital Cleanse. After a full 14 days of starting the intervention, the Waitlist group were asked to complete their post-intervention outcome measures and an exit questionnaire. This time point is called 'Time 3' (and only those assigned to WL in the first instance were asked to complete this step). This concluded the experimental part of the study.

Approximately one-third of participants were invited to a very brief 10–15-minute exit interview to discuss their experiences of the intervention and its effects (if any). Upon expressing interest in the study, participants were asked if they would like to complete an interview. Of those who expressed an interest in being interviewed, nine were randomly picked. Due to COVID-19 restrictions, these were conducted via Zoom. Consent for this interview was again given via Google Forms (see Appendix E).

Measures

Demographics and Sample Characteristics

We collected various demographic information about participants, including age, gender, ethnicity, study and employment status. In addition to these basic demographics, we asked participants various questions about their social media use and habits. These included agreement or disagreement to statements such as "My current use of social media causes me to feel stressed", and self-reported information about time spent using passive social media per week, motivations for signing up to the study, and which SM platforms caused participants most distress or from which one they wanted a break.

Outcome Measures

Outcome measures selected for this study were intended to represent different dimensions of wellbeing outlined in Mason Durie's Te Whare Tapa Whā model (1985). Since the study aimed to capture health and wellbeing in a holistic sense, measures were chosen to be brief and easy to use. The questionnaire was piloted amongst a small convenience group of other postgraduate students before the study to ensure it only took ten minutes to complete and that questions were easily interpreted. Table 1 summarises when each group filled out the respective outcome measures.

Mental Wellbeing (Taha Hinengaro). The Short Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) was selected. It is a short-form version of the Warwick-Edinburgh Mental Wellbeing Scale previously used to measure mental wellbeing in New Zealand (Blank et al., 2016; Serlachius et al., 2021). It consists of seven items (rather than 14 in the original), with higher scores associated with better mental wellbeing. Items include statements about participants' thoughts and feelings, such as "I've been able to make up my own mind about things", and are scored on a 5-point Likert Scale from 1 to 5 (1 = none of the time, 5 = all of the time). Total scores are then summed and transformed to give a final score between 7 and 35. The SWEMWBS shows high internal consistency

in young adults and adolescents (Ringdal et al., 2017) and is widely used to measure mental

wellbeing (Tennant et al., 2007).

     Social Wellbeing (Taha Whānau). The UCLA Loneliness Scale (ULS-8) short-form version

consists of 8 items. The scale measures perceived social isolation and has been revised from the

longer scale (20 items) for better ease of use. Items include statements such as "There is no one I

can turn to" and are scored on a 4-point Likert scale with responses including 'never', 'rarely',

'sometimes' and 'always'. The scale includes two reverse coded items ("I am an outgoing person"

and "I can find companionship when I want it"). A higher score on the scale indicates more

loneliness. Research with a population of university students found good internal consistency of the

scale with a Cronbach's Alpha of .72 (Tayfun et al., 2011). Similar revised versions of the scale have

been used in New Zealand; however, these were with older adults (Wright-St Clair et al., 2017).

     Physical Wellbeing (Taha Tinana). A modified New Zealand Physical Activity Questionnaire

(NZPAQ) was used. We used this questionnaire because it is culturally appropriate for our New

Zealand sample, containing activities specific to Māori and Pacific culture, such as Kapa Haka.

Modifications were done to capture the most relevant information, i.e., physical activity levels.

Modifications included using only two of the original eight questions and moving the questionnaire

from a face-to-face interview to online. The questions related to how long participants spent on

average engaging in moderate and vigorous exercise each day in the past week. A developer of the

original questionnaire was contacted for permission. The individual noted that due to the

questionnaire being in the public domain, it was acceptable and appropriate for this study.

     Spiritual Wellbeing (Taha Wairua). The Life Engagement Test (LET) consists of 6 items to

measure purpose in life. Items include statements such as "I value my activities a lot" and are scored

on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores indicating

more purpose in life. Half of the items on the scale are reverse coded. The LET is psychometrically

sound for various populations, with Cronbach's alpha ranging from 0.73 to 0.83 in studied

populations (Scheier et al., 2006). However, it does not appear to have been used in a New Zealand

sample.

   Sleep. In terms of the Te Whare Tapa Whā model, sleep may be viewed as both an aspect of

physical health and mental wellbeing. The Satisfaction, Alertness, Timing, Efficiency and Duration

(SATED) sleep questionnaire consists of five items, with higher scores indicating better sleep health.

Items include questions such as "Are you satisfied with your sleep" and are scored between 0 and 2

(0 = never/rarely, 1 = sometimes, 2 = usually/always), with total scores ranging from 0 to 10. This is a

relatively new scale but was chosen because of its brevity and the emerging psychometric evidence

of validity. Benitez et al. (2020) reported adequate internal consistency (Cronbach's a = 0.77) in their

sample of 4,385 Spanish participants and described the measure to be suitable for measuring sleep

health in the general population. It has not been used in New Zealand samples.

   Fear of Missing Out (FoMO). The relatively new construct of FoMO construct does not map

directly onto the Te Whare Tapa Whā model. However, it is highly relevant to the social media

domain as individuals often experience what has been known as FoMO due to viewing what their

peers are doing via social media. The Fear of Missing Out Scale consists of 10 items measuring

distress related to missing out on social interactions, with higher scores indicating more FoMO.

Items are scored on a 5-point Likert scale (0 = not at all true of me, 5 = extremely true of me), and

total scores range from 10 to 50. Przybylski et al. (2013) report a good internal consistency with a

Cronbach's alpha of .87. The scale has been used in New Zealand among young SNS users (Riordan et

al., 2015; Classen et al., 2020).

Table 1

Timeline of Quantitative & Qualitative Measures

	Measure	Time 1		Time 2		Time 3
		DC	WL	DC	WL	WL
Quantitative	WEMWBS (Warwick-Edinburgh Mental Wellbeing Scale)	✓	✓	✓	✓	✓
	ULS-8 (Short Form UCLA Loneliness Scale)	✓	✓	✓	✓	✓
	NZPAQ (New Zealand Physical Activity Questionnaire)	✓	✓	✓	✓	✓
	LET (Life Engagement Test)	✓	✓	✓	✓	✓
	SATED (SATED Sleep Questionnaire)	✓	✓	✓	✓	✓
	FoMO (Fear of Missing Out)	✓	✓	✓	✓	✓
Mixed methods	Exit Questionnaire			✓		✓
	Exit Interviews (subsample)			✓		✓

Exit Questionnaire

After completing their respective two weeks of Digital Cleanse, participants were asked

three multiple-choice questions in an exit questionnaire. Using a seven-point Likert scale, the first

multiple-choice question asked how easy or difficult participants found the Digital Cleanse, with

responses ranging from 'very easy' to 'very difficult'. The second question asked participants which

social media platforms they missed the most, with participants being able to choose multiple

options. The final multiple-choice question asked how likely participants would be to change their

social media habits going forward, using a five-point Likert scale, with responses ranging from 'very

likely' to 'very unlikely'. In addition to the multiple-choice questions, three free text questions were

asked: 1) *"Following from the previous question, "How likely are you to change your social media*

habits going forward?" - What will change and why? If you're unsure, just write N/A". 2) *"What did*

you find most challenging about the study?". 3) *"What did you do to fill the time you'd usually spend*

on social media?"

Exit Interviews

Exit interviews were conducted and recorded over Zoom with participants' consent (see

Appendix E). These followed a brief semi-structured guideline (see Appendix F) and were centred on

questions around what was easiest and most challenging about the study and how participants

coped throughout. These were designed to elicit more detailed information about participants'

experience of limiting their passive social media and provide insights into how the experience felt.

Once recorded, the interviewer (CW) transcribed each interview.

Data Collection Methods

All questionnaire data was gathered directly from each participant via Qualtrics (an online

questionnaire platform). However, screenshots of "screen time" were emailed to the researcher

(CW) and stored in a secure University approved Google Drive folder, identified by the participant's

unique study number. Participants were able to decline to send their screenshots. In that instance,

we asked those participants to estimate their daily use of social media at the end of the study and

asked them to comment if they could persevere with their self-imposed limits.

Analysis

The demographic variables and sample characteristics were summarised using means, ranges and standard deviations, frequencies, and percentages as appropriate.

The clinical outcomes were summarised for all participants at baseline using descriptive summaries. Levels and changes in the continuous outcome measures were summarised as means and standard deviations. Pre-post mean change scores were calculated for each continuous clinical outcome. Independent t-tests were used to assess statistical significance between the Digital Cleanse and the Wait List group. This was done by comparing mean scores of outcome measures at time one against mean scores of outcome measures two weeks later, at time two. During those two weeks, the Digital Cleanse group limited their social media, whilst the Wait List group continued to use social media as usual. Regarding physical wellbeing, we used categorical data. Specifically, participants were asked for their average daily moderate and vigorous activity levels, categorised into several bands, for example, 0 – 10 minutes and 10 – 30 minutes. These bands were then recoded into less than 30 minutes and more than 30 minutes to be analysed. Physical activity data were analysed separately using a Fisher's exact test.

In a subsequent analysis, we looked at the overall effect of the intervention. This meant creating a 'pre' and 'post' change score for each group. For the DC group, 'pre' was Time 1, and 'post' was Time 2. For the WL group, 'pre' was Time 2, and 'post' was Time 3. We did this to see if the intervention, on the whole, affected wellbeing. The analysis was conducted through a paired samples t-test to examine within-subject changes.

Finally, we conducted a 'per protocol' analysis. This involved a between-group analysis between all those in the WL group and only those DC group who had provided evidence that they had adhered to the conditions of the study, i.e., limited their passive social media to 15 minutes per day for two weeks. We could ascertain which participants adhered by examining weekly screenshots of participant 'screen time' sent by email by those in the DC group. Due to the nature of the analytics provided by Android and Apple phones, we needed to estimate daily use based on weekly

data. That means that if a participant spent fewer than 105 minutes (15 min x 7 days) on passive

social media on a given week, they were classified as having adhered to the conditions of the

intervention. To be counted as 'adhered' and thus included in the 'per protocol' analysis, they

needed to have adhered on both weeks of the DC. A two-tailed p-value <0.05 was taken to indicate

statistical significance in this study.

Exit questions asked about participants' experiences of the study. The most common

answers to the free text questions were coded into categories to be analysed numerically. Interview

transcripts were analysed using NVivo software, and a thematic analysis was conducted.

Chapter 3: Results

Recruitment

There were a total of 61 participants who expressed an interest in participating in the study, of which 45 were randomised to start the study and 38 who completed it (i.e. took part in the intervention and returned post-intervention questionnaires). There were 19 participants in the Digital Cleanse (DC) group and 19 in the Wait List (WL) group who completed the study. Figure 1 shows the flow of participants through the study, including reasons for dropping out (such as the stress of the COVID-19 lockdown in New Zealand, the inability to control/limit using social media, and other personal circumstances). Recruitment and all study procedures occurred between July 16th and November 1st, 2021.

Figure 1

Participant Flow Chart
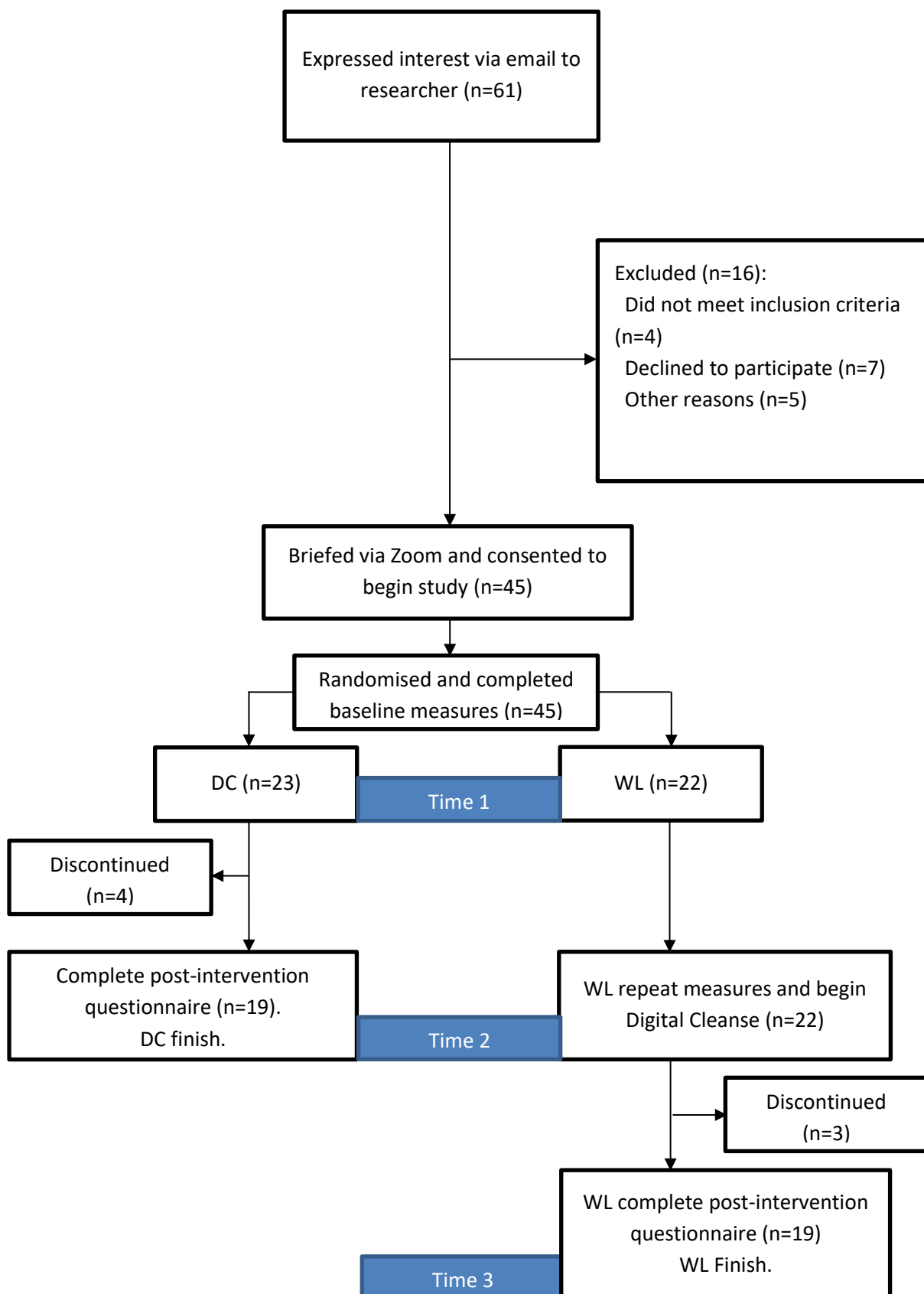
Demographics and Participant Characteristics

Participants (n=45) had a mean age of 20.65 (SD=2.64) and were predominantly female (86%). The most commonly reported ethnicities were Asian (42.2%) and NZ European (28.9%). Most participants were full-time university students currently not in paid employment (66.7%). Full demographic data for both groups and the entire sample are presented in Table 2.

Table 2

Participant Demographics

Demographic	Digital Cleanse (*N* =23)	Wait List (*N*=22)	Total (*N*=45)
Age			
Mean (SD)	20.65 (2.64)	20.82 (2.56)	20.73 (2.57)
Gender, n (%)			
Female	20 (87%)	19 (86.4%)	39 (86.7%)
Male	3 (13%)	3 (13.6%)	6 (13.3%)
Ethnicity [a], n (%)			
NZ European	8 (34.8%)	5 (22.7%)	13 (28.9%)
Māori	1 (4.3%)	2 (9.1%)	3 (6.7%)
Pacific	1 (4.3%)	0 (0%)	1 (2.2%)
Asian [b]	9 (39.1%)	10 (45.5%)	19 (42.2%)
Other	4 (17.5%)	5 (22.7%)	9 (20%)
Study/Employment Status, n (%)			
University student & employed	5 (21.7%)	6 (27.3%)	11 (24.4%)
University student & not employed	16 (69.6%)	14 (63.6%)	30 (66.7%)
Full-time employment	1 (4.3%)	2 (9.1%)	3 (6.7%)
Part-time employment	1 (4.3%)	0 (0%)	1 (2.2%)

[a] We used ethnicity prioritisation to represent ethnic groups in line with the Ministry of Health guidelines (Ministry of Health, 2017)

[b] Includes participants who identified as Indian, Japanese, Chinese, Filipino, Sri Lankan and Malaysian

In addition to basic demographic questions, participants responded (yes/no) to several different questions about their social media use. Table 3 shows participant responses to the statements about their social media use. There was a 100% agreement with the statement, "*I use social media to procrastinate*". A vast majority of respondents (from 97.8% to 62.2%) agreed with other statements about spending too much time on SM or experiencing stress from using SM.

Table 3

Participant Responses to Statements About Social Media Use

Statement	Agree (%)	Disagree (%)
I use social media to procrastinate	100	0
My current use of social media makes me less time efficient than I want to be	97.8	2.2
I feel I spend too much time on social media	93.3	6.7
I find it hard to turn social media off	86.7	13.3
My current use of social media causes me to feel stressed	62.2	37.8

Participants were also asked to estimate how many hours they spent online per week using passive social media. Almost half (48.9%) spent between 11 – 20 hours using passive social media per week and 28.9% estimated to spend more than 20 hours per week. See Figure 2 for details.

Figure 2

Participants' Estimated Hours per Week Using Passive Social Media
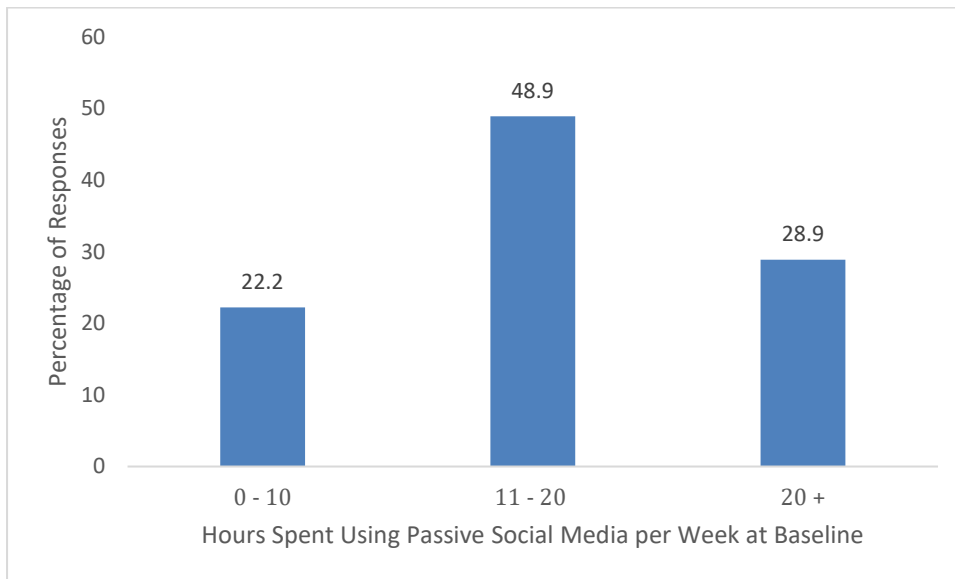
Participants were asked which social media platforms caused them the most distress or that they most wanted a break from. The most commonly selected platform was Instagram (selected by 80% of participants), followed by Facebook (35.5%), TikTok (33.3%) and YouTube (28.8%) and others. See Figure 3 for details.

Figure 3

Social Media Platforms Identified as Causing Most Distress or Those from Which Participants Wanted

a Break
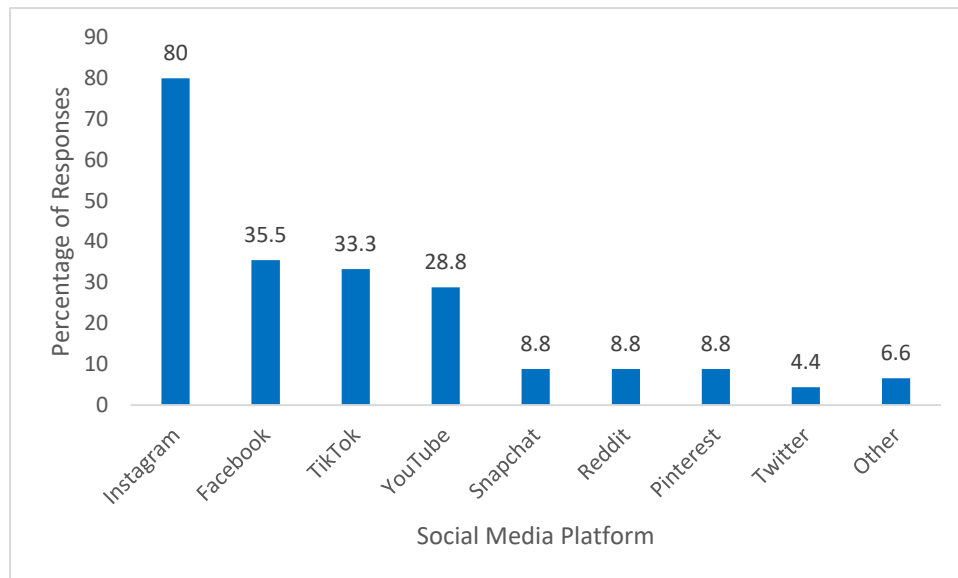
The most common reasons for participating in the study were '*wanting to decrease social media use*' (53.3%) and '*wanting a short break from social media'* (35.5%). See Table 4 for details.

Table 4

Participants' Motivation for Taking Part in the Study

Motivation for Participating	Responses % (n)
I want to decrease my social media use long term	53.3 (n=24)
I want a short break from social media	35.6 (n=16)
I want to help you with your study	8.9 (n=4)
Other (Interested in the topic)	2.2 (n=1)

Clinical Outcomes

Between-Group Analysis

Mean change scores between Time 1 and 2 were calculated for both groups (start and finish of the Digital Cleanse or start and finish of Waitlist, respectively) and compared using an independent samples t-test for all continuous measures. Results revealed a statistically significant difference between the two groups in the Short Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) and the Life Engagement Test (LET) (capturing mental and spiritual wellbeing dimensions, respectively). Specifically, participants in the Digital Cleanse (DC) showed significantly more improvement in mental and spiritual wellbeing than participants in the Waitlist (WL) condition, who continued to use social media as usual. Mental wellbeing scores on the SWEMWBS showed a mean change of 3.98 in the DC condition, compared to 0.36 in the WL condition ($p < .001$). Spiritual wellbeing measured by the LET revealed a mean change of 3.21 in the DC condition, compared to -0.34 in the WL condition ($p < .001$). No significant differences were found between the DC and WL groups on the other continuous measures of wellbeing (social, sleep and FoMO scales). Table 5 presents raw scores at each time point, mean change scores for both groups and full results of the statistical testing.

Table 5

Between-Group Analysis - Mean Change Scores for Continuous Outcome Variables

	DC (n= 19)			WL (n=22)			Mean Change Difference (95% CI)	P-Value
Outcomes	Time 1 M (SD)	Time 2 M (SD)	Mean Change	Time 1 M (SD)	Time 2 M (SD)	Mean Change		
Short Warwick Edinburgh Mental Wellbeing Scale (Mental Wellbeing)	19.74 (2.90)	23.72 (3.21)	3.98	20.41 (2.31)	20.77 (2.77)	.36	3.62 (1.67, 5.58)	p < .001
Life Engagement Test (Spiritual Wellbeing)	21.95 (4.03)	25.18 (3.38)	3.23	23.23 (4.97)	22.86 (4.51)	-.37	3.60 (1.47, 5.68)	p < .001
ULS-8 Loneliness Scale (Social Wellbeing)	17.16 (2.95)	15.63 (3.79)	-1.53	19.09 (3.70)	18.91 (2.43)	-.18	-1.35 (-3.53, .84)	p = .22
SATED Sleep Questionnaire (Sleep)	6.00 (1.83)	7.79 (2.07)	1.79	6.14 (1.88)	7.14 (1.83)	1.00	.79 (-.49, 2.06)	p = .22
Fear of Missing Out (FoMO)	24.84 (7.07)	22.05 (6.70)	-2.79	26.32 (5.58)	26.00 (7.05)	-.32	-2.47 (-5.6, .66)	p = .12

Physical activity was measured on a categorical scale and thus was planned to be analysed separately. Average daily physical activity levels were measured in several bands, e.g. 10 – 30 min, 30 min – 1 hour, etc., and then recoded into two categories: less than 30 mins and more than 30 mins. A fisher's exact test revealed no statistically significant difference between the two groups for either moderate (p=0.30) or vigorous (p=0.23) physical activity. A visual inspection of Table 6 below suggests a slight increase in moderate and vigorous activity overall within both groups. This seems to be more pronounced for moderate activity in the WL group. However, no statistical significance was found.

Table 6

Participants' Daily Levels of Physical Activity

Time/Activity Type	DC (n=19)		WL (n=22)	
	Pre	Post	Pre	Post
> 30 min Moderate	47.4% (n=9)	63.2% (n=12)	36.8% (n=7)	63.2% (n=12)
> 30 min Vigorous	26.3% (n=5)	42.1% (n=8)	21.1% (n=4)	26.3% (n=5)

Within-Group Analysis – Effects of the Digital Cleanse

To examine the effects of the Digital Cleanse (two weeks of restricted passive social media use) regardless of initial group allocation, we conducted paired t-tests on mean change scores within each group. All outcome measures showed statistically significant within-subject improvements over the two weeks of limiting social media, except the ULS-8 Loneliness scale (representing the social wellbeing dimension) in those originally allocated to the DC condition (p = 0.10). Results for all outcome measures are presented in Table 7.

Table 7

Within-Group Analysis - Effect of Limiting Passive Social Media (during the intervention period) on Continuous Wellbeing Outcomes

	DC Group **During Intervention**				WL Group **During Intervention**			
	(n= 19)				(n = 19)			
Outcomes	Time 1	Time 2	Mean	Paired T-	Time 2	Time 3	Mean	Paired T-Test
	M (SD)	M (SD)	Change	Test P-value	M (SD)	M (SD)	Change	P-value
Short Warwick Edinburgh Mental Wellbeing Scale (Mental Wellbeing)	19.74 (2.90)	23.72 (3.21)	3.98	p < .001	21.20 (2.61)	24.02 (3.41)	2.82	p = .001
Life Engagement Test (Spiritual Wellbeing)	21.95 (4.03)	25.18 (3.38)	3.23	p = .002	23.10 (4.52)	25.26 (4.21)	2.16	p < .001
ULS-8 Loneliness Scale (Social Wellbeing)	17.16 (2.95)	15.63 (3.79)	-1.53	p = .10	18.84 (2.00)	16.16 (3.17)	-2.68	p = .003
SATED Sleep Questionnaire (Sleep)	6.00 (1.83)	7.79 (2.07)	1.79	p < .001	6.89 (1.85)	7.74 (1.66)	.85	p = .038
Fear of Missing Out (FoMO)	24.84 (7.07)	22.05 (6.70)	-2.79	p = .032	25.05 (6.50)	20.31 (5.45)	-4.74	p = .001

Between Group: Per Protocol Analysis

Finally, a between-group per-protocol analysis was undertaken that included all WL participants and only DC participants who had provided evidence that they had adhered to the conditions of the study, i.e., limited their passive social media to 15 minutes per day for two weeks. This was done by examining each DC participant's screenshot of their screen time they had sent to the researcher at Time 1 and Time 2. Thirty-seven were included in this analysis (15 in the DC group and 22 in the WL group).

Results of independent samples t-test revealed that mental wellbeing (<.001) and spiritual wellbeing (p=.002) scores remained significantly different between groups. Additionally, the measure of FoMO became statistically significant between groups during this analysis (p=.043). Table 8 shows further details of this analysis.

Table 8

*Per Protocol Between-Group Analysis of Continuous Outcome Measures*

	DC (n=15)			WL (n=22)			Mean Change Difference (95% CI)	P-Value
Outcomes	Time 1 M (SD)	Time 2 M (SD)	Mean Change	Time 1 M (SD)	Time 2 M (SD)	Mean Change		
Short Warwick Edinburgh Mental Wellbeing Scale (Mental Wellbeing)	19.17 (2.77)	22.87 (2.53)	3.70	20.41 (2.31)	20.77 (2.77)	.36	3.33 (1.44, 5.23)	p < .001
Life Engagement Test (Spiritual Wellbeing)	21.47 (4.02)	24.53 (3.46)	3.06	23.23 (4.97)	22.86 (4.51)	-.37	3.43 (1.14, 5.75)	p = .002
ULS-8 Loneliness Scale (Social Wellbeing)	17.87 (2.47)	16.27 (4.03)	-1.60	19.09 (3.70)	18.91 (2.43)	-.18	-1.42 (-3.74, .89)	p = .111
SATED Sleep Questionnaire (Sleep)	6.33 (1.88)	7.80 (2.18)	1.47	6.14 (1.88)	7.14 (1.83)	1.00	.47 (-.84, 1.77)	p = .237
Fear of Missing Out (FoMO)	25.60 (7.71)	22.47 (7.14)	-3.13	26.32 (5.58)	26.00 (7.05)	-.32	-2.81 (-6.1, .42)	p = .043

Post-Intervention Survey Questions

The first post-intervention question was, "*How easy/difficult did you find the Digital Cleanse?".* Most found it either 'fairly difficult' (39.5%, n=15), or 'fairly easy' (31.6%, n=12). Figure 4 shows all responses.

Figure 4

How Easy/Difficult did you Find the Digital Cleanse?
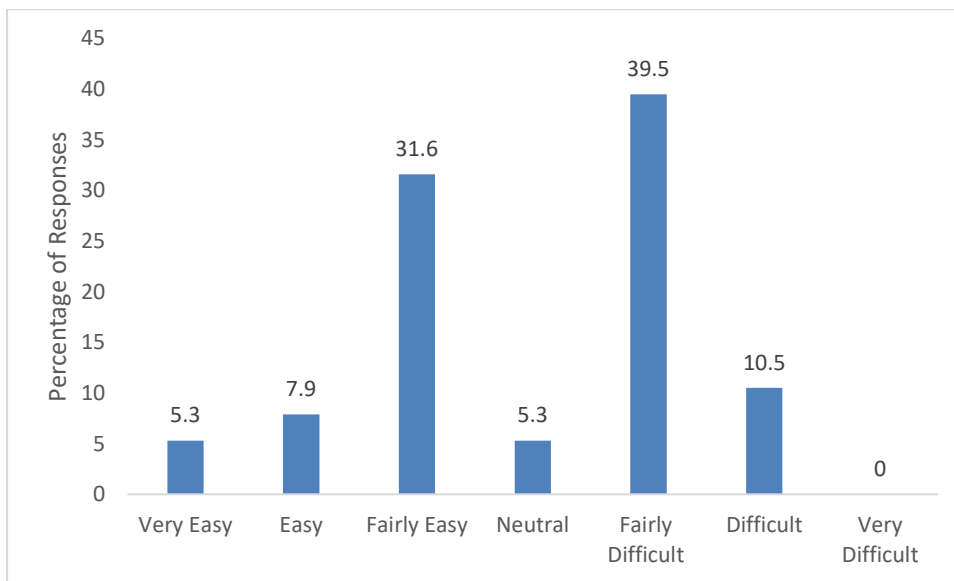
The second post-intervention question asked *Which of the following platforms did you miss/crave the most?* Instagram stood out the most from all the other platforms (76.3%, n=29), followed by YouTube (34.2%) and TikTok (23.7%). Please note participants were able to pick more than one response. Figure 5 shows all responses.

Figure 5

Which of the Following Platforms did you Miss/Crave the Most?
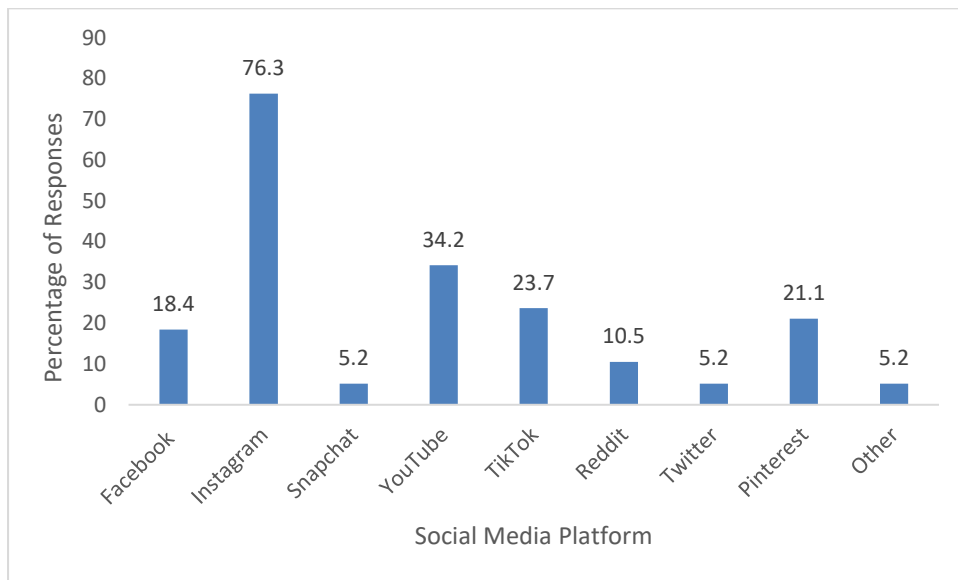
The third post-intervention question asked, *How likely are you to change your social media habits going forward?* Nearly all participants reported being either 'fairly likely' (47.4%, n=18) or 'very likely' (39.5%, n=15) to change their social media habits. Only 2.6% (n=1) reported being unlikely to change their SM habits. Figure 6 shows all responses.

Figure 6

How Likely are you to Change Your Social Media Habits Going Forward?
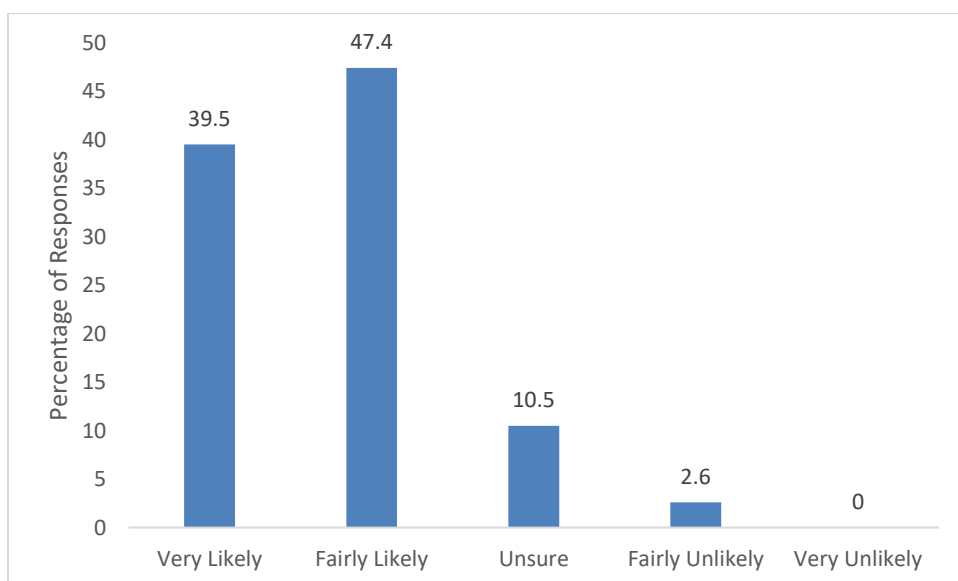
DIGITAL CLEANSE

Analysis of Open-Ended Post-Intervention Survey Questions

Overall, the vast majority of responses to the free text questions in the post-intervention survey were brief, approximately one or two sentences in length. Consequently, they were coded into frequently occurring categories and are presented numerically to show the range and hierarchy of responses related to each question. The total of some of these questions exceeded 100% due to participants being able to express multiple ideas in one response. For example, when asked what they did with their time usually spent on social media, participants were able to report several ideas (and frequently did so), e.g. reporting multiple activities such as reading, watching television and exercising.

Question: *"How likely are you to change your social media habits going forward? What will change and why?".*

There were 44 responses to this question, which were coded into six discrete categories (see Table 9)*.* The two most frequent responses included the desire to spend less time on passive social media (36.6%, n=16) and on social media overall (25%, n=11). Some (13.6%, n=6) also planned to delete their SM apps, and others (9%, n=4) aimed to be more mindful of their SM habits or to carry on with their newly found alternative hobbies (9%, n=4). Table 9 summarises the coding of the responses.

DIGITAL CLEANSE

Table 9

Coding of Participants' Responses to "How likely are you to change your social media habits going

forward? What will change and why?"

Response	Number (%)
Aim to spend less time on passive SM	16 (36.6%)
Aim to spend less time on SM overall	11 (25%)
Aim to delete unhelpful SM apps	6 (13.6%)
Aim to stay mindful of time spent on SM	4 (9%)
Aim to continue with new hobbies picked up in study	4 (9%)
Aim to change SM routines	3 (6.8%)

Question: *What Did You Find Most Challenging About the Study?*

There were 53 responses to this question, and responses were coded into seven discrete categories

(see Table 10). The majority of participants (65.8%, n=25) reported that changing their social media

habits was the most challenging aspect of the study. Other popular responses included adhering to the

15-minute time limit (21.1%, n=8) and not being able to use social media as a coping mechanism or to

relax (15.8%, n=6). Some other participants noted the impact of the lockdown being a challenge (10.5%,

n=4). Table 10 summarises the coding of the responses.

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Table 10

What did you find Most Challenging About the Study?

Response	Number of Responses
Having to break usual SM habits	25 (65.8%)
Adhering to 15 min time day limit	8 (21.1%)
Not having SM as a coping mechanism/relaxation	6 (15.8%)
Limiting SM during Lockdown	4 (10.5%)
Lack of SM as a news/information source	3 (7.9%)
Fear of Missing Out (FoMO)	3 (7.9%)
Other [a]	4 (10.5%)

[a] Other included responses that did not fit into any other category, e.g., finding alternative activities to pass the time and difficulty separating passive and active SM.

Question: *"What did you do to fill the time you'd usually spend on social media?"*

There were 98 responses to this question, as many participants reported similar ways they spent their time. The most popular included reading (52.6%, n=20) and studying/working (52.6%, n=20). Table 11 summarises the coding of the responses.

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Table 11

What did you do to Fill the Time you Would Usually Spend on Social Media?

Activity	Number of Responses
Reading	20 (52.6%)
Study/Work	20 (52.6%)
Traditional Media (TV, Movies, Music etc.)	16 (42.1%)
Hobbies	13 (34.2%)
Physical Activity/Going Outside	13 (34.2%)
Face-to-Face Interaction	5 (13.2%)
Virtual Communication (Calling, Messaging, FaceTime etc.)	6 (15.8%)
Other	5 (13.2%)

* Other included responses that did not fit into any other category, e.g., Gambling, meditating

Exit Interviews – Qualitative Data

Nine participants agreed to participate in a post-study interview to discuss their study experiences. Of the participants who agreed to participate, six were female, and three were male. Interviews were brief and took, on average, 15-20 minutes. A thematic analysis was applied to the transcripts to explore the common themes and points of agreement as well as divergence. A total of four themes were identified from the analysis and are outlined below.

Realisation That Social Media Time is Wasted Time

A common theme raised during the interviews was participants' realisation of how much time they wasted on social media before the intervention. When asked what their key learnings from the study were, many felt they were *"wasting hours scrolling",* referring to the passive social media they had

to limit during the intervention. This finding was consistent with a baseline questionnaire item that found 97.8% of participants reported that social media makes them less time-efficient than they want to be. Some participants noted not being cognizant of how much time they spent on passive social media until they had to limit it. Many noted how many *"more hours in the day"* they had when their SMU was restricted.

For some participants, an accompanying concept to the realisation of time wasted on social media was a subsequent feeling that their productivity increased during the Digital Cleanse. Some noted that upon realising how much time they had wasted on social media, they chose to use that time to *"be productive"* and *"do more meaningful stuff"* instead*.* One participant noted that:

"Passive social media eats a lot more of my time than I realise. It really is time wasted without much productivity. You can feel it now more than before. I have so many more hours in the day."

While the majority found that productivity increased during the intervention, others had contrasting opinions. Some participants reported feeling that social media was a tool for procrastination, and they therefore found *"substitutes"* to fill this void. One participant noted that:

"I found other activities to fill my time with and procrastinate in other ways."

This finding highlights individual differences in the way participants used social media. It appears that what individuals used SM for pre-intervention impacted how they coped without it. For some, SM served as a way to procrastinate, and consequently, they found alternative methods to distract themselves when it was taken away. However, SM appeared to be more ingrained in daily life for the majority. Upon reflection, these participants sought to spend the time they usually would on social media in more productive ways, such as reading, picking up new hobbies, exercising, and spending more time outdoors.

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Social Media Fills a Void of Boredom

Participants were asked if there were certain times of the day that they found staying away from social media to be harder or easier. The prevailing opinion was that it was easier to adhere to the study conditions during the daytime. Most participants were university students (91.1%), and as the intervention occurred during semester time, most participants had studies to do or had part-time jobs that took up their time. For example, a participant noted:

"*It was easier during the day when I was studying and working; in the evenings, when I was chilling at night, I had to find other things to do*"

However, this did not apply to all those in the study. Some found that night was easier due to spending more with friends and family. These offline, face-to-face interactions may have even eased some of the distress from not being able to use SM. When discussing what they enjoyed most about the study, one participant commented:

"*It forced me to reach out to people, I was talking to people more*"

Some participants found that evenings spent without social media were more pleasant due to the ease with which they fell asleep. One participant noted that the *"buzzing"* in their brain stopped because they were not on SM immediately before bedtime, leading to better sleep.

Regardless of whether participants found day or night easier, a large majority of participants talked about a feeling of boredom without social media or having 'free time' that they could not find anything to fill with. Many explained that, when not participating in this experiment, they would use passive social media when bored to simply pass the time. For example, one participant reported:

"*When I got bored with work and bored in general, I tend to use that time to scroll on socials, but it wasn't there so I guess that was a hard part of it*"

Another participant echoed this, reporting that the most challenging part of the study was resisting going on social media "*whenever I had downtime or was bored*".

Social Media as an Addiction

The language used by several participants described their social media use as though it was an addiction. For example, one participant recalled having *"withdrawal symptoms"* and described the study as an *"interesting experience trying to control your urges"*. Furthermore, another explicitly noted the addictive nature of social media in their life and commented that:

> *"It's about respecting it as a drug. Yeah, definitely, I'll continue to limit it going forward".*

An interesting point raised by a participant was the suggestion that they just replaced one addiction with another. While many participants used their newfound spare time to engage in productive and healthy new habits such as picking up a new hobby or exercising more, others engaged in counter-productive activities to cope with limiting social media. One participant noted that with the time they would usually spend on social media, they spent gambling instead, noting that:

> *"One of the things I replaced it with at the start was roulette"*

Social Media During COVID-19 Lockdown

In the early stages of the study, New Zealand entered into a nationwide lockdown (a complete nationwide lockdown was announced to start on August 17th and lasted 14 days, followed by 92 days in further regional, primarily Auckland, restrictions) due to COVID-19. The study proceeded as planned; however, it is impossible to exclude the potential impact of the lockdown due to remote learning and working conditions and the restrictions on movement and socialisation. Unsurprisingly, participants noted that lockdown significantly impacted how they engaged with the study and how they approached the Digital Cleanse and had to restrict their social media. One participant noted:

> *"The lockdown definitely affected it. So that made it a lot more difficult than I expected"*

Other participants highlighted the psychological impact of the lockdown on them generally. The social isolation, anxiety and uncertainty from spending an extended period in lockdown, particularly for participants in Auckland, meant some participants felt uneasy and thus unsure whether this was down to the intervention or lockdown more generally. One participant noted that "*because of the lockdown, I wasn't my best possible self*".

In contrast, another participant revealed positive impacts of the lockdown on their passive social media use, explaining that:

"A lot of the time I scroll is when I'm waiting for things to happen like being on the bus, waiting for a lecture. With lockdown, I wasn't able to do this"

Chapter 4: Discussion

The present study investigated whether limiting passive social media use impacts various aspects of health, including mental, social, physical and spiritual wellbeing, sleep, and Fear of Missing Out (FoMO). There has been a call among researchers and policy analysts for more experimental research to establish causality and direction of effects due to the large amount of observational data suggesting a relationship between SMU and wellbeing (Berryman et al., 2018; Orben, 2020; Verduyn et al., 2018). To date, there has been very little research in this field in the New Zealand context. The current project was designed to address some of the limitations identified in the literature. We conducted a feasibility pilot trial focused on assessing the impact of limiting SMU on wellbeing in a New Zealand sample of young adults using constructs drawn from a holistic indigenous health model, Te Whare Tapa Whā (Durie, 1985).

Statement of Principal Findings

This study has demonstrated a significant improvement in mental and spiritual wellbeing (measured by the SWEMWBS and LET, respectively) for those who limited their passive social media to 15 minutes per day for two weeks (i.e. those taking a Digital Cleanse), compared to those on a waitlist who continued using SM as usual. A user guide for SWEMWBS (Tennant et al., 2007) suggests that a change of between 3 and 8 points in the scale represents a meaningful improvement. Our results revealed a mean change of 3.98 in the DC group's mental wellbeing scores which is thus statistically and practically significant. In contrast, there is no guidance on what constitutes a meaningful change in the Life Engagement Test (our spiritual wellbeing measure). Scores on the scale range from 5 to 30, and we observed a mean change in scores of 3.23 in the DC group, suggesting a potentially meaningful shift. The other dimensions of wellbeing (physical activity, loneliness, sleep and FoMO) did not reach

between-group statistical significance in the primary analysis; however, visual inspection of the results

suggests a trend towards improvement for those allocated to Digital Cleanse. Per protocol analysis

restricted to those who adhered to the regime of the Digital Cleanse (n=15) confirmed the primary

findings and revealed a statistically significant reduction in FoMO in the DC group compared to those on

the waitlist.

A within-subject analysis suggested that all aspects (other than loneliness in the DC group) of

assessed wellbeing showed statistically significant improvements during the course of the two-week

intervention (regardless of initial group allocation). Collectively, the results of our pilot study suggest

that, on the whole, wellbeing improved with the reduction of passive social media for two weeks.

A thematic analysis of exit interviews revealed interesting insights about young adults and their

relationship to social media. Firstly, several people noted that the experiment made them realise how

much time they were wasting on various platforms. Consequently, many reported engaging in more

meaningful activities, be it work, other hobbies or re-engagement with their friends and family. Some of

the language participants used to describe social media suggests an addictive nature of the technology,

and reducing use resembles dealing with 'craving' like feelings and urges. Finally, the COVID-19

lockdown that occurred during the course of the study, predictably, had a likely impact on social media

use.

Between-Group Findings

Mental Wellbeing

Regarding the improvement in mental wellbeing, our finding echoes an already existing large

body of cross-sectional research suggesting associations between SMU and lower mental wellbeing (Lin

et al., 2019; McRae et al., 2017; Marino et al., 2018; Seabrook et al., 2016; Twenge et al., 2018a; Yoon et al., 2019). Our research extends on these correlational results by providing experimental evidence that limiting social media use may improve mental wellbeing. Indeed, our finding corroborates previous experimental research too. In a review looking at how limiting SMU impacts wellbeing, Eriksen (2020) found that all studies that limited SMU found beneficial effects. One of the included studies conducted by Wolf (2016) found that two weeks of minimised Facebook use led to a significant improvement in mental wellbeing. However, the Wolf study used a within-subject design without a control group and only measured one social media platform: Facebook. Additionally, the study asked participants to limit their Facebook use as much as they could for two weeks, providing no specific guidelines for participants to follow. The present research thus extends on Wolf's findings by demonstrating a between-group improvement in mental wellbeing across multiple SNS, using a specified time limit on passive SMU.

A more comparable study to ours was conducted by Hunt et al. (2018), who found that individuals who limited Facebook, Instagram and Snapchat to 10 minutes per day, per platform, for three weeks saw significant improvements in depression and loneliness compared to a control group. Our design (randomised control trial, objective measures of time spent on SM and imposing a similar time limit to our study - 30 vs 15 mins per day) and broad findings appear to be similar. However, Hunt and colleagues measured symptoms of depression using the Beck Depression Inventory (Beck et al., 1996), while we focused on the concept of wellbeing using the SWEMWBS. Thus, we examined mental wellbeing more broadly rather than the clinical measure used by Hunt and colleagues. We should therefore be cautious about comparing results directly. In fact, most research on restricting SMU has used clinical outcomes to understand the sudden rise of mental health distress in young people over the past decade or so (Twenge et al., 2018a). Much of this clinical research may not be directly comparable to our results. Nevertheless, our results appear to support similar research findings in the SM domain.

Our study did not investigate any mediators or moderators of the relationship between limiting social media use and changes in wellbeing. However, previous research has suggested that passive social media use may increase online social comparison and envy, thereby leading to reductions in mental wellbeing (Lin et al., 2019; Verduyn et al., 2015). While our study did not look at mediating factors such as these, it is reasonable to assume that a reduction in social comparison due to the restriction on passive social media played a role in the improvements seen in mental wellbeing. Participants in our study may have experienced offline social comparison during the intervention, although research suggests that online environments are more likely to induce negative comparisons than offline ones (Walther et al., 2011). In fact, findings from our thematic analysis support this idea. For example, one participant explained that they felt social media *"pushes the expectation of what life should look like"*, which led them to feel a *"general downward shift in mentality"* upon resuming using passive social media after the intervention. Another participant noted that *"your life doesn't change if you see photos/stories"* in reference to passively using Instagram, commonly associated with social comparison and envy (Yang, 2016). Our findings thus provide a platform for future research to investigate potential mediators and moderators to better understand why changes in wellbeing occur. Furthermore, brief interventions such as ours may help individuals recognise that passive SMU may lead to negative wellbeing changes.

Spiritual Wellbeing

A novel and interesting finding of our study is the observed improvement in spiritual wellbeing (measured by LET) among those in the Digital Cleanse compared to the control group. The literature on the relationship between SMU and spiritual wellbeing is lacking, and our finding highlights how existing research may have overlooked this domain of health. To our knowledge, no study has yet looked at the

direct relationship between SMU and spiritual wellbeing, let alone how limiting SMU may impact

spiritual wellbeing. A single study that we identified that is of relevance here comes from Wood et al.

(2016), who looked at self-efficacy as an aspect of spiritual wellbeing and how it mediated the

relationship between problematic social media use (PSMU) and mental health problems. The authors

found that PSMU was related to higher scores of depression and anxiety in those with lower self-efficacy

and thus lower spiritual wellbeing. Our results build on the Wood et al. findings by investigating the

direct impact of SMU on spiritual wellbeing rather than as a mediating factor. The lack of research on

SMU and spiritual wellbeing may be due to previous studies focusing on a limited number of outcome

measures and common clinical outcomes such as depression and anxiety. Our study used the Te Whare

Tapa Whā model (Durie, 1985) as a base to assess health and wellbeing holistically and may have

considered spirituality more overtly than other studies. We therefore offer potential new insights into

how spiritual wellbeing may be positively impacted by restricting SMU. In New Zealand, spiritual

wellbeing, or taha wairua, is highly important for indigenous Māori and health interventions and advice

to young people may consider how limiting social media may impact this. Indeed, this could be useful

for other ethnic and cultural groups, as shown in our study where, while small, our sample represented

various ethnic groups.

  Of interest here is a theme that arose in our qualitative analysis: participants felt they were

"wasting time" on social media. Subsequently, they engaged in *"more meaningful"* activities and felt

"more productive" during the intervention. This increase in meaningful activity may have led to increases

in spiritual wellbeing, as participants felt more satisfied with the way they were spending spare time.

Items from our measure of spiritual wellbeing (Life Engagement Test) include statements such as "*I

value my activities a lot*" and "*To me, the things I do are all worthwhile",* which may have captured this

sense of meaning among participants.

A noteworthy issue is the potential cross-over between our mental and spiritual wellbeing outcome measures. The measure of spiritual wellbeing used in this study, The Life Engagement Test (LET; Scheier et al., 2006), assesses engagement with life activities. The LET scale was chosen due to its brevity and because it was deemed to assess broad aspects of the spiritual dimension in a way that many relate to, rather than a specific aspect such as religiosity. Spirituality is a broad, complex and highly subjective dimension of wellbeing, and there is no widely used scale to measure it. However, the LET contains statements that may have overlapped with our mental wellbeing measure (SWEMWBS). While the authors of the LET examined convergent validity by correlating the LET with other psychometric scales, the SWEMWBS was not included. However, examples of items in the LET include "*I have many reasons for living*" and "*There is not enough purpose in my life*". Similarly, the SWEMWBS includes items such as "*I've been feeling useful*" and "*I've been feeling optimistic about the future*". A closer examination of these statements might suggest that spirituality, understood as a feeling of being connected to one's life and feeling a sense of purpose, could also be a marker for mental health problems such as depression. Thus, our finding that both mental and spiritual wellbeing improved significantly between groups could be reflecting how closely related the dimensions of mental and spiritual wellbeing are. However, it could also be a measurement idiosyncrasy. Regardless, in the Te Whare Tapa Whā model, all aspects of health must be in harmony (as the 'walls' of the whare [house] are interconnected) to promote healthy wellbeing. Therefore, the potential interconnection between mental and spiritual wellbeing may not need to be viewed negatively.

Within-Group Findings

Because of our study's design, we were able to conduct a within-group analysis to further investigate the potential effects of the intervention. Within-subject analysis revealed statistically

significant improvements in all outcome measures except one. This finding suggests that a period of two weeks of limiting passive SMU may lead to wide-ranging health and wellbeing improvements, consistent with previous research demonstrating that restricting SMU can lead to changes in multiple areas of wellbeing. The Eriksen (2020) review of experimental studies restricting SMU found beneficial effects in several health domains, including affect, loneliness, depression, anxiety, mental wellbeing, and life satisfaction. However, the studies included in Eriksen often only measured one or a few outcomes at once. Our research thus extends on previous findings by measuring multiple outcomes within the same sample.

Loneliness

We observed that, on the whole, loneliness appeared to decrease when limiting social media. However, this reduction only held statistical significance in one of our two groups. Within-subject analysis revealed a significant reduction in loneliness for those in the WL group but not for those in the DC group. Although not statistically significant, there was nevertheless a reduction in mean loneliness scores for those in the DC group. One explanation for this finding is that we used the short-form version of the UCLA Loneliness Scale. Other research has generally used the full 20 item version; however, we used the short form version for practical reasons, which may have not adequately picked up the change for the DC group. Research concerning how SMU impacts loneliness is in its infancy, and researchers have found both positive and negative correlations between the two (Marttila et al., 2021; O'Day & Heimberg, 2021; Yang, 2016). Experimental research mirrors the cross-sectional findings, with some studies suggesting that restricting SMU led to reductions in loneliness (Allcott et al., 2020; Große Deters and Mehl, 2013; Hunt et al., 2018). However, others have found no impact on loneliness (Hall et al., 2019), and some have even found increases in loneliness (Vally & D'Souza, 2019; Verduyn et al., 2015).

Only one study (Verduyn et al., 2015) looked specifically at the types of social media use (passive vs active) and how they impacted loneliness, finding increases in loneliness with both. Thus, SMU and loneliness appear to have a complex relationship, which our results reflect.

It is important to note here that the COVID-19 lockdown may have impacted experiences of loneliness. In the early stages of the study, New Zealand entered into a nationwide lockdown that lasted for two weeks, followed by 92 days in further regional, mostly Auckland-based restrictions. A recent study suggested that young people experience more loneliness during lockdown environments than other age groups (Lisitsa et al., 2021). Lockdowns prevent opportunities to connect with people face-to-face, engage in usual leisure or social events, or interact with friends and colleagues. It is reasonable to expect that people spend more time on social media to connect with others, access information, or find entertainment or distraction from a stressful/unusual situation during a lockdown. This could have differential impacts on individuals, with some finding comfort in staying up to date with information or social posts from their friends and others. However, for others, this may have led to a feeling of further social isolation due to the lack of face-to-face interactions. A recent longitudinal study by Marinucci et al. (2022) examined how online and offline social interactions impacted psychological distress in 1113 Italian adults. They found that while online social interactions protected against psychological distress during the most restrictive isolation periods, they did not substitute offline interactions during more mild periods of restriction. This nuance may help to explain our findings, as the level of restrictions changed among our participants. While some participants undertook their intervention under highly restrictive conditions, others limited social media when restrictions on social gatherings had been eased. Thus, online interactions may have reduced loneliness for highly restricted people. However, when participants took the intervention under mild restrictions, these online interactions may have been a poor substitute for offline interactions and thus had a weak impact on loneliness.

Findings from our qualitative analysis appear to support the idea that lockdown had a significant impact on participants' experiences of loneliness. Interview data suggested that the restrictions on passive social media led participants to *"reach out to people"* and have *"more meaningful conversations with friends".* It appeared that the interaction with others was most important, with a fairly even split of participants reporting doing this face-to-face versus online. Participants spent varying amounts of time in lockdown based on where they lived. Those in Auckland went the longest without face-to-face interactions as restrictions lasted for over 100 days. We did not collect data about participants' location, so we cannot comment on how or if lockdown restriction may have impacted a sense of loneliness and/or ability to connect with others.

Sleep

We found that sleep improved in the within-subject analysis, in line with a large number of cross-sectional or observational studies (Alonzo et al., 2020; Levenson et al., 2014; Lemola et al., 2014; Woods & Scott, 2016) as well as experimental research (He et al., 2020; Hughes & Burke, 2018) associating social media use with poor sleep outcomes. Growing evidence suggests that the blue light emitted from smartphones may interfere with sleep quality (Gringras et al., 2015; Vandewalle et al., 2009). Recent experimental research commented that *"short-wavelength light affects not only circadian rhythm and evening sleepiness but causes further effects on sleep physiology and alertness in the morning"* (Höhn et al., 2021, p.66). Qualitative analysis of interviews with our participants revealed that participants found it easier to sleep without the "*buzzing in their head*" from using social media before falling asleep. Participants also spoke about spending more time engaging in physical activity and time spent outside, both of which have been linked with better sleep outcomes (Cain & Gradisar, 2010; Dawson & Encel, 1993). While our findings are encouraging, 42.1% of our participants reported watching

traditional media (television, film, radio) in the time they would usually spend on social media. A

distinction between the effects on sleep of traditional media and social media use specifically could thus

be a target of future research.

FoMO

We found within-subject improvements in FoMO, measured through the FoMO scale developed

by Przybylski et al. (2013). The FoMO scale measures distress related to missing out on social

interactions and is a common experience among young people using social media. Within-subject

improvements in FoMO were observed in both groups. Overall, our finding of an observed improvement

during the course of limiting social media is in line with previous experimental research suggesting that

restricting SMU leads to reductions in FoMO (Brown & Kuss, 2020; Hunt et al., 2018; Zhou et al., 2020).

Some contrasting research has suggested that FoMO increases due to restricting social media use (Eide

et al., 2018; Stieger & Lewetz, 2018). However, these studies had participants either abstain completely

from social media or even from smartphones in their entirety. Therefore, our study suggests that

limiting social media may be more beneficial for FoMO than completely abstaining or removing devices

entirely. This also fits with the idea of social media as a 'drug' or having an 'addictive' quality. Our

thematic analysis suggests that participants view social media as an addiction, likening it to a *"drug that

should be respected"* and noting feelings of "*withdrawal*" upon beginning the intervention.

Moderation vs. Abstinence

Our findings suggest that the strategy of moderation (i.e., reducing but not abstaining) on social

media may be helpful. Eriksen (2020) suggests that reducing or moderating social media use may be

more beneficial than complete abstinence. All studies in the Eriksen review that limited SMU (rather

than requiring abstinence) resulted in beneficial effects on wellbeing. Our results thus support Eriksen's

claims, as participants in our study were asked to limit their social media use to 15 minutes per day for

two weeks rather than completely abstain from using it. Social media has become a staple source for

many individuals to stay in touch with family and friends, and expecting individuals to abstain from using

it completely would be unrealistic and potentially detrimental to wellbeing. Allowing participants

unlimited time on active social media and a moderated amount of time on passive SM may have allowed

them to stay updated and feel included without eliciting any negative impacts. Eriksen comments that

abstinence may be most effective for heavy users of SM. However, this may lead to negative changes in

wellbeing due to the 'withdrawal' users may go through. Our qualitative results appear to support this,

with several interview participants commenting that they experienced withdrawal-like symptoms during

their intervention and referred to social media as a drug. The notion of social media as an addiction may

have important consequences for clinicians when supporting clients who show problematic social media

use. It will be important to look at individual differences when tailoring interventions, such as not

expecting heavy users to completely abstain from SMU and ensuring that positive aspects, including

messaging, are not removed.

Per Protocol Analysis

Our secondary per-protocol between-group analysis included all participants in the WL

condition and those in the DC group who provided evidence of their adherence to the 15 minutes per

day passive social media restriction. This sub-group analysis revealed a significant improvement in

mental wellbeing (p<.001) and spiritual wellbeing (p=.002) among experimental participants compared

to the control group. In addition, scores of FoMO revealed a statistically significant between-group

change, favouring the DC group (p=.043). This finding suggests that when participants *truly* limit their

passive social media, they may experience significant decreases in FoMO. Przybylski et al. (2013) define

FoMO as "a pervasive apprehension that others might be having rewarding experiences from which one

is absent" (p. 1841). FoMO is characterised by distress related to a perceived lack of social

connectedness and thus, as a concept, is related to a sense of social wellbeing. Przybylski et al. (2013)

link FoMO with negative experiences, including lower general mood levels and overall life satisfaction.

Previous research on the impact of limiting SM on FoMO is mixed. However, studies tended to use

complete abstinence. Our study allowed participants 15 minutes per day of passive social media use,

which might have allowed individuals to feel connected enough that FoMO was not prevalent and thus

decreased FoMO scores in those that limited SM. Another possible explanation is that as individuals did

not see as much of their peers online, they did not experience a fear of missing out as they weren't

constantly seeing what others were doing.

One key issue plaguing previous research is self-reported social media use and the lack of

objective measures. Sewall et al. (2020) noted that estimated and actual time spent on SM varied

considerably in a study examining how accurate individuals' recollection of their time spent on SM was.

Consequently, our study asked participants to send screenshots of their weekly SMU, as captured by

their phone 'screen time'. 74% of participants who completed the study provided evidence that they

had adhered to the study guidelines via sending screenshots. The finding that mental and spiritual

wellbeing remained statistically significant between groups when this objective measure was accounted

for suggests a robust primary finding. A further significant group difference (FoMO) was also noted in

the per-protocol analysis. This finding suggests that wellbeing improvements remained strong when

participants truly adhered to study guidelines.

Improvements on Previous Research

The present study's design extends on previous research by investigating the effect of limiting all passive social media on wellbeing rather than specific platforms. Much of the existing research has either asked participants to limit all social media, limit specific platforms or asked for complete abstinence. For example, Brown and Kuss (2020) saw improvements in mental wellbeing among participants who abstained from passive social media for one week. In contrast, Hunt et al. (2018) limited Facebook, Instagram and Snapchat to 10 minutes per day per platform for three weeks. In contrast, we explicitly instructed participants to only limit *passive* social media, in line with previous research suggesting that passive activities such as 'scrolling' may lead to envy and other negative feelings that result in diminished wellbeing outcomes (Verduyn et al., 2018). Our findings are consistent with both Brown & Kuss (2020) and Hunt et al. (2018) in that mental wellbeing improved when SMU was restricted. However, we add to the literature by demonstrating that wellbeing improved without participants having to completely abstain from SMU and without having to choose specific apps to stay away from. Research suggests that passive social media leads to detrimental impacts on wellbeing (Verduyn et al., 2015; Verduyn et al., 2018); however, many apps have both passive and active elements to them. For example, on Instagram, individuals can both privately message peers (active) and scroll through the news feed (passive). This highlights an advantage of our study in that we allowed participants to choose which apps to use while instructing them to limit passive use to 15 minutes per day. Our results, therefore, suggest that it is not the specific apps that result in reductions in wellbeing, but the passive activities conducted on them that are of significance.

Furthermore, participants were told they could use active social media without limits. Active social media includes activities such as messaging family and friends or posting content (Burke et al., 2010). Therefore, our findings are consistent with previous research suggesting that active social media

may enhance wellbeing due to increased social support and connectedness (Kross et al., 2021; Liu et al., 2019). Findings from our thematic analysis appear to support the idea of an active-passive dichotomy, with one participant noting that *"the only part of social media I need in my life is the communication aspect"*. These findings may help to inform schools, policymakers, parents, researchers and clinicians on how different types of social media use impact wellbeing. In recent years, scholars have noted that time spent on social media is a poor predictor of wellbeing changes (Berryman et al., 2018; Orben, 2020; Twenge et al., 2018a; Verduyn et al., 2018). Thus, rather than simply thinking about time spent on social media, our results, among others, suggest that the type of SM activities are most relevant. This may have important clinical relevance when developing social media interventions. However, due to the exploratory nature of this research, such recommendations cannot be made.

Null Findings

While there was a significant between-group difference in mental and spiritual wellbeing, we observed no statistical differences in other indices of health. However, the within-subject analysis showed a pattern of improvement in nearly all aspects of wellbeing captured in this study. These findings may suggest that those randomised to the waitlist condition, who served as the control group in the experimental design, may have seen improvements in wellbeing simply due to taking part in the study. If true, this is an example of the Hawthorne effect, which is a *"change in behaviour as a motivational response to the interest, care, or attention received through observation and assessment"* (Sedgwick & Greenwood, 2015, p. 1). All participants met the researcher for a briefing before beginning the intervention to hear about what was involved and ascertain their willingness to participate. Furthermore, inclusion criteria for the study included a desire to take a break from social media. Therefore, when participants were assigned to the waitlist condition in which they were supposed to

use social media as usual, they may have unknowingly changed their behaviour. We did not measure

their SMU during this time and only instructed them to 'continue their normal behaviour'.

Regarding loneliness, an explanation for the null finding could be down to scale selection. In

contrast to our results, previous research by Hunt et al. found an improvement in loneliness among

experimental participants who limited social media compared to a control group. However, the Hunt et

al. study used a revised, full 20 item version of the UCLA Loneliness Scale, whereas our study used a

short form eight-item version of the scale. Scales including more items may better capture the outcome

being measured (Robinson, 2018), providing a possible explanation for why those in the DC group

improved in loneliness despite the lack of statistical significance. Furthermore, the Hunt et al. study

allowed participants a total of 30 minutes per day on Facebook, Instagram and Snapchat, whereas we

only allowed 15 minutes across all platforms. It could be possible that we overly restricted how much

SM our participants could use and thus socially isolated them. However, it remains unknown what an

appropriate length of time is to limit SMU, with no 'golden number' yet identified. Furthermore, due to

our study taking place during a COVID-19 lockdown, participants' only way to socialise with peers was

digitally. Thus, restricting SM could have had detrimental impacts on social wellbeing.

While we saw no significant increase in sleep between groups, this could be down to several

factors. Firstly, sleep patterns may take longer than two weeks to change. Research shows that

adolescents use technology to assist them in falling asleep, such as watching television or listening to

music (Eggermont & Van den Bulck, 2006). Participants in our study may have found it difficult to adjust

to removing a ritual to check social media and thus experienced no change or improvement in sleep

over the two weeks. On the contrary, it could be possible that participants replaced social media with

other forms of technology, including television or streaming movies from their devices. The bright light

from phones has been shown to lead to changes in circadian rhythm and disrupt sleep (Gringras et al.,

2015; Vandewalle et al., 2009), and it would be reasonable to assume that a replacement in the form of

a laptop, tablet or other device would elicit similar disruptions. In fact, an exit question from the final

survey found that 42.1% of participants reported replacing social media with traditional media such as

television and movies.

Another possible reason that sleep did not improve between groups is due to the COVID-19

lockdown. A common sleep hygiene practice is to only use the bedroom for sleeping (Cespedes et al.,

2014). However, participants had to work from home and possibly in their bedrooms due to the

lockdown. This may have been particularly common for our sample of young people in shared flat

situations or living in crowded housing. While we did not specifically gather this data, participants may

have spent more time in their bedrooms than they would have without a lockdown. Furthermore,

previous research on the effects of the pandemic and associated restrictions such as lockdowns also

suggested an increase in problems with sleep, including insomnia, nightmares and reductions in total

sleep time and sleep efficiency in 991 participants from 79 countries (Petrov et al., 2021).

Regarding the domain of physical health, we were unable to report any statistically significant

findings. We measured physical health through physical activity levels, in line with previous research

that suggested social media use to predict changes in levels of physical activity (Grimaldi-Puyana et al.,

2020; Shimoga et al., 2019). We found a trend that moderate and vigorous physical activity levels

increased when undertaking the intervention. However, this was not statistically significant, and thus we

cannot comment on what this means. A possible limitation of our measure of physical activity was that it

was self-reported and categorical, making it difficult to analyse. We used the guidelines set out by the

NZPAQ, which may not have been sensitive enough to capture subtle changes in physical activity. This

was made even harder due to the COVID-19 lockdown, which naturally changed physical activity

routines. The closure of gyms and the cancellation of team sports altered usual routines. However, due

to being forced to spend more overall time indoors, people may have spent more time exercising as it was one of the few freedoms of the lockdown. Previous research by Grimaldi-Puyana et al. (2020) used objective measures like GoogleFit and Apple Health to track physical activity levels. Further research should attempt to use these methods rather than self-reported physical activity as we did. Furthermore, physical activity is one aspect of a broader concept of physical health. Future studies may thus look to measure physical health through other measures such as nutrition or substance use.

Strengths and Limitations of the Study

Our study had several notable strengths. Firstly, we used a robust experimental design. A key feature of the previous research concerning SMU and wellbeing is the overwhelming amount of cross-sectional data and the consequent need for experimental research. A plethora of research has examined correlations between SMU and wellbeing changes. However, only a few studies have used an experimental design to establish causality or ascertain the direction of effects, exemplified by the fact that in Eriksen's (2020) review of restricting social media use on wellbeing, only 19 experimental studies were identified. While our study is exploratory in nature and involves a small sample size, we add to the literature by using a randomised control trial design. By controlling against a waitlist, we have been able to measure the effects of the intervention and still offer the potential benefits of the Digital Cleanse to those on the waitlist, albeit after a short delay. We conducted a within-group change analysis by repeating the baseline (Time 2) and post-intervention (Time 3) measures for those entering the intervention after a waitlist.

Further to this, we employed a mixed-method design. Specifically, we gathered quantitative data on well-validated outcome measures and qualitative data in the form of exit questions and semi-structured interviews. The advantage of using both methods is that we could measure and detect

changes in wellbeing before and after the intervention and uncover unique insights into participants'

experiences. Due to this being a novel study in New Zealand, hearing the participants' 'voices' is valuable

in interpreting results and informing future research designs in the area.

Another strength of our study was the attempt to measure SMU objectively. Many previous

studies have relied on self-reports of social media use, which have proven inaccurate (Sewall et al.,

2020). However, due to the screen time function only being released in 2018, it is understandable that

studies before this were subject to this limitation. Nevertheless, we asked participants to send

screenshots of their screen time before their intervention, after one week and once again at the end of

the fortnight. By doing so, we were able to track whether participants adhered to the conditions of the

study. This allowed us to conduct a secondary per-protocol analysis using only participants who adhered

to the conditions of the experiment.

A final strength of our study is the inclusion of multiple dimensions of health and wellbeing

using a holistic health model. To the best of our knowledge, this is the first study in New Zealand to

restrict SMU. As such, we chose to use the Te Whare Tapa Whā model (Durie, 1985), which allowed us

to examine multiple aspects of health at once in a culturally appropriate manner. Without viewing

wellbeing in such a holistic way, we may not have been able to observe changes in spiritual wellbeing.

Previous research has often looked at clinical outcome measures such as depression and anxiety due to

the attention in the media around the parallel rise of social media and mental health distress in young

people. While this is justified, there may be merit in viewing health more holistically to uncover how

SMU impacts different aspects of health. At the core of New Zealand's society is a bicultural framework,

and utilising indigenous models of health may better capture different aspects of health not picked up

by Western models. This does not mean discounting mental health problems but looking at them as part

of a wider, more holistic model of health.

The present study also had a range of limitations. The most prominent of these is the scope of the study. Due to this being a feasibility trial, we aimed to limit our sample size to 40-50 participants in total, ending up with 45 (at baseline). The small sample size means future research should attempt to replicate these findings in a larger sample. Furthermore, our sample was made up of primarily university students (91.1%) who were majority female (86.7%) and of Asian ethnicity (42.2%), reflecting the University of Auckland demographics (45.6% Asian, 57.5% Female). Our findings are thus not generalisable to wider populations, and future research should attempt to replicate the findings with a more diverse and representative population. To minimise participant burden, we only conducted very brief interviews; thus, insights into participant experiences were limited.

Although a controlled experiment, our study design can be prone to the Hawthorne effect, whereby participants' behaviour changes when it is being observed or recorded (Sedgwick & Greenwood, 2015). For example, we do not know if those on the waitlist changed their behaviour in relation to SM use or not. While we advised them to continue normal SM use, we did not collect data on their use. The lack of group differences on some of the other measures of wellbeing may be due to them already limiting or changing technology use.

Another significant limitation of our study was that we could not track whether participants used social media on other devices than their phones. While we took steps to minimise this limitation by asking participants to limit their use across all devices, there was no way to measure if this was adhered to. This is a problem that previous studies have also run into (Hunt et al., 2018), and future research should attempt to account for this. However, due to most young people accessing social media on their smartphones (Datareportal, 2021), it is unlikely that screen time on other devices would have had a significant impact. Nevertheless, this problem should be acknowledged in the future.

Another limitation was the lack of separation between passive and active social media. For example, Instagram has both a direct messaging function (active) and a news feed (passive) within the same app. This means that if participants want to send a message on Instagram, they may be tempted to view the news feed as they must go through this to access the messaging service. This provided an element of self-control to the study that we did not account for. One participant noted that they felt proud of the self-control they demonstrated throughout the study. However, this added aspect of the study may have resulted in different results. This was not a problem for other apps such as Facebook, as the news feed and messaging functions are in separate apps (Facebook and Facebook Messenger). During their intervention briefing, participants often asked about this. Thus, future research should be informed on the limited apps and be explicit in explaining how to separate passive and active use to participants.

A final limitation of our study was brought about by the COVID-19 lockdown. New Zealand entered a nationwide lockdown one week into the recruitment phase of our study. This provided several challenges. Firstly, recruitment shifted to online posters and advertisements, and with so much information present about the lockdown, potential candidates may have been too overwhelmed with information to notice our advertisements. Secondly, it is reasonable to assume that at least some participants were under considerable stress during the study, experiencing anxiety about the lockdown situation, and feeling socially isolated due to the restrictions. Thirdly, the lockdown meant that due to staying at home all the time, the only way to socialise with those outside of one's 'bubble' was using the internet (and/or telephone). Insights from our interviews revealed that passive forms of social media were sources of news information for several participants. The need to stay up to date with the lockdown situation may have altered participants' time on SM. Some may have spent more time on screens in general due to being in a lockdown and having limited options on how to spend free time.

Future Directions

Future studies could address several areas of social media use and its effects on our health. Firstly, future studies should attempt to replicate our findings with a larger, more diverse sample of New Zealand youth. Adolescents are known to be high consumers of social media, and their mental health has been in the spotlight, so future research should also include those younger than 16 years.

Another area of future research could more closely examine the difference between moderation (limiting use to a reasonable amount) and abstinence (quitting social media for the duration of the study). While current findings suggest that moderation may be more effective in improving wellbeing (Eriksen, 2020), research of this nature is still in its infancy. Future studies should strive to better understand how moderation and abstinence impact wellbeing outcomes. Furthermore, future studies should investigate how different periods of restriction impact wellbeing. We used 15 minutes per day based on the fact other studies had found improvements in wellbeing from using similar restrictions (Hunt et al., 2018). However, other studies have used shorter and longer periods. However, no consensus exists on what period of time is most effective in improving wellbeing. It is feasible that different people may prefer and cope better with different time limits.

Another direction for future research is to alter the length of intervention. We used two weeks in our study; however, this may not have been long enough to elicit changes in aspects of health such as sleep. It may take longer for certain domains of wellbeing to make meaningful change, and thus future studies should look at longer and more thorough interventions. Additionally, future studies should follow up with participants after their intervention to see if any observed improvements are lasting. Our participants expressed their wish to use SM more mindfully and continue with their newly formed habit, but only long-term follow-up can assess if they have been able to achieve this. Studies of this kind may

require longitudinal and experimental elements, which previous scholars have called for (Berryman et al., 2018; Orben, 2020; Verduyn et al., 2018).

Finally, future studies should attempt to better capture social media use objectively. While our study built on previous research by having participants send screenshots of their screen time, this did not come without flaws. For example, we could not track whether participants had accessed social media on other devices such as laptops or tablets. Furthermore, only 74% of participants fully adhered to the study instructions regarding limiting passive SM to 15 minutes per day for two weeks. Further studies should attempt to better capture this, although this may prove difficult with privacy concerns being a vulnerability. Objective outcome measures could also be improved upon. For example, our measure of physical activity was categorical, which meant that it was difficult to analyse physical wellbeing results. Future studies should employ methods used by Grimaldi-Puyana et al. (2020), who used GoogleFit and Apple watches to objectively measure physical activity. Alternatively, future researchers could measure physical activity in different ways, including diet, substance use, or muscle fatigue.

Summary and Conclusions

We examined how limiting passive social media use to 15 minutes per day for two weeks impacted a variety of wellbeing outcomes in a sample of young adults in New Zealand. Using a randomised waitlist-controlled trial, we found that mental and spiritual wellbeing showed statistically significant improvements between our experimental and control groups. Per protocol analysis confirmed those findings and revealed that those in the DC group had a greater reduction in FoMO compared to WL. None of the other outcomes showed between-group differences, which may be due to our study being underpowered with a small sample size or the Hawthorne effect. However, the design

of our study (repeated measures for those originally on the waitlist) allowed us to capture within-subject changes. These revealed statistically significant improvements in all outcome measures except one (loneliness in the DC group), suggesting that limiting social media may improve health outcomes in several domains of wellbeing.

We add to previous research by specifically limiting *passive* social media, highlighting that this type of social media use may be responsible for reductions in wellbeing. Our finding thus suggests that even a brief (two weeks) intervention can improve a myriad of health-related outcomes among young people. This is highly relevant in the face of a parallel rise in both social media use and rates of mental distress in this population.

Social media is here to stay, at least for the foreseeable future. Over the past couple of decades, it has become an ever-present part of the lives of billions around the globe. It has become a tool that enables individuals to communicate with friends and family, organise events, sell products, gather information and meet new people, among other positive or enriching functions. With the growth of new platforms and other innovations, it is normal for many people to hold several social media accounts and spend a significant amount of time daily or weekly engaging with these platforms. However, for many, this could turn into problematic social media use, which may have negative consequences on our health and wellbeing. Previous research has shown associations between social media use and changes to wellbeing outcomes, particularly among young people who are heavy social media users. Our study adds to these findings by revealing that a short-term intervention may benefit one's wellbeing. In light of what is increasingly known about excessive social media use, we should learn how we can mitigate its effects. This is particularly true in our current social climate, with billions around the world spending increasing time online due to the COVID-19 pandemic. Our study, among others, suggests that limiting

the amount of time we spend on social media may be one such way that we can lessen the impact of

social media use on our wellbeing and relationships with other people.

Furthermore, understanding nuances such as how different types of social media use impact

wellbeing may help to inform individuals, parents, schools and policymakers on how to get the best out

of the technology. For example, it appears that passive forms of social media such as scrolling are linked

to negative changes in wellbeing. In contrast, active forms of social media such as messaging friends are

linked to positive changes. Extending our knowledge of these nuances may be essential to developing

effective interventions and guidelines.

When used in moderation, social media may be beneficial (through connections we can

maintain with friends, family or community) or at least neutral for our wellbeing. Moreover, it can be an

inexpensive and far-reaching tool to help disseminate useful information, educate or entertain us.

However, there seems to be a more worrying element, and for some, excessive SM use may bring about

distress. Only time will tell how, as a society, we adapt to these new technologies, which are likely to

become more pervasive in our day-to-day lives. We have an opportunity to use this technology to

enhance our lives rather than harm us.

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Appendix A: Recruitment Flyer

DIGITAL CLEANSE

Appendix B: Participant Information Sheet

PARTICIPANT INFORMATION SHEET

Project title
Digital Cleanse" - Exploring the effects of limiting social media on wellbeing.

Research team

Principal Investigator	Masters Student Researcher	Head of Department
Dr Karolina Stasiak	Charlie Whitfield	Prof Trecia Wouldes
Department of Psychological	cwhi934@aucklanduni.ac.nz	Department of Psychological
Medicine		Medicine
k.stasiak@auckland.ac.nz		University of Auckland
		t.wouldes@auckland.ac.nz

Charles (Charlie) Whitfield is a student at the University of Auckland, School of Psychology studying

toward a Master of Science. His research is supervised by Dr. Karolina Stasiak from the Dept of

Psychological Medicine, University of Auckland.

You're invited to take part in our study

We are inviting young adults aged between 16-25 who wish to limit their social media use (we call it a

"Digital Cleanse") for a period of two weeks to see if it impacts their wellbeing. Your participation is

voluntary, and you may decline this invitation at any point without giving reason. All participants who

complete the study will be in with a chance to win one of ten $50 Westfield vouchers.

What does the study involve?

This study is a trial to see if limiting social media to 15 minutes a day for 2 weeks impacts on your

wellbeing. We want to invite people to limit their 'passive social media'. This study is an experiment and

has the following steps:

1) If you're interested, you will meet with the researcher (Charlie) via Zoom to go through the pre-
   study briefing. This will take 10-15 min. During this time, you will be sent a link to a Google Form
   where you will be asked for consent to participate in the study.

2) You will then be asked about your social media use and you can either send us a screenshot of your screen time or estimate your use.

3) You will then fill out an online questionnaire about your wellbeing. This takes about 10 minutes.

4) Next, you will be randomly assigned to either start the Digital Cleanse right away or to wait for 2 weeks.

5) Halfway through the Digital Cleanse, the researcher will contact you by email to ask you about your social media use (you can send a screenshot or estimate your use)

6) For people in the Digital Cleanse, we will contact you after 2 weeks to fill out the online questionnaire again, which should once again only take around 10 minutes. For people who were asked to wait for 2 weeks, you are then invited to start their Digital Cleanse. You will once again take your questionnaire, and then take a final one after your digital cleanse is complete.

7) About a third of the participants will be invited for a brief (in person or Zoom) interview to talk about how the Digital Cleanse went for you and what you took out of it. This is optional.

What am I being asked to *limit?*

"Passive social media" is where you're absorbing information but not directly engaging with it. This includes activities such as (but not limited to) watching Instagram/Facebook/Snapchat stories, scrolling social media news feeds, and watching videos on YouTube/TikTok. We ask that you limit these sorts of activities to 15 minutes per day for the entire 2 weeks. We know that most people access social media on their phones, but for the purpose of this study we ask that you limit passive social media across *ALL* devices including laptops, computers, iPad's, tablets etc.

What social media *can* I use?

We know that it's important to stay connected with family, whānau, and friends so you're free to do that through apps such as Messenger, WhatsApp, email, and text as much as you like during the 2 weeks. There is no limit on this whatsoever. If you would like to post content (Instagram/Facebook stories, Facebook status, snapchat's etc.) then you are also free to do this and reply to any direct messages on these apps as much as you'd like.

The main objective of the Digital Cleanse is to spend no more than 15 minutes per day scrolling, reading, watching, and checking social media.

Why are we doing this study?

DIGITAL CLEANSE

Social media is playing an increasing role in our day to day lives. As of January 2021, 4.2 billion people were using social media globally. Research on how social media affects our well-being is mixed, with both positive and negative impact. Our study aims to look at how limiting certain aspects social media may affect the well-being in a sample of young New Zealanders.

Are there any risks? And what about benefits?

We don't believe there are any risks associated with this study. There may be some benefits for your wellbeing from taking part in Digital Cleanse – and we are doing this research to investigate it. You will also be helping us understand the impact of passive social media use on health and wellbeing, which is an increasingly important topic.

Data Storage, Retention, Destruction and Future Use:

All data obtained in this study (including survey, audio recording files, electronic transcripts of interview data) will be stored in a password protected within the University of Auckland storage system (which is backed up and secure) for a minimum of six years. Data will be accessible by the Master student researcher and the supervisor for the purpose of analysis. If you take part in the Zoom interview at the end of the study, recordings of it will be made with your permission and saved on the local and secure drive.

Your rights as a participant

Participation is voluntary

You have the right to withdraw from participation at any time without providing reason. You can request withdrawal of your data from the study within 14 days of your participation.

Confidentiality and anonymity:

The preservation of confidentiality is paramount. Any identifying information will be stored separately to the study data, and no identifying information will be used in any reports or publications arising from this study.

What will happen after the study?

The participants will be identified only by a participant ID number on all trial documents and any electronic database. All documents will be stored securely and only accessible by study staff and authorized personnel.

What else do I need to know?

DIGITAL CLEANSE

- ❖ You are free to withdraw from the study at any point, no questions asked.
- ❖ You get to keep your phone and all of your devices.
- ❖ How you limit your social media is up to you. You don't have to delete any apps or close your accounts
- ❖ The study results will be reported in a Master's thesis
- ❖ If you are a student of the researchers we give our assurance that your participation or non-participation in this study will have no effect on your grades or relationship with the University and that you may contact your academic head should you feel that this assurance has not been met.
- ❖ If anything during this study causes you to become upset, talk to your family doctor, Student Health & Counselling (if you're UoA student: call 0800 782 999) or someone you trust. There are free phone/text counselling options too:
  Need to talk? Call/text 1737
  Youthline – 0800 376 633 or text 234
  Lifeline - 0800 543 354 or text 4357

Extra Information

- ❖ If you require Māori cultural support, talk to your whānau in the first instance. Alternatively, you may contact the administrator for He Kamaka Waiora (Māori Health Team) by telephoning 09 486 8324 ext. 2324. If you have any questions or complaints about the study, you may contact the Auckland and Waitematā District Health Boards Māori Research Committee or Māori Research Advisor by phoning 09 486 8920 ext. 3204. Additional Māori or Pasifika support can be found by following the links below:

  https://www.raukura.org.nz/?url=/

- ❖ AHREC Chair contact details: For concerns of an ethical nature, you can contact the Chair of the Auckland Health Research Ethics Committee at ahrec@auckland.ac.nz or at 373 7599 ext. 83711, or at Auckland Health Research Ethics Committee, The University of Auckland, Private Bag 92019, Auckland 1142.

DIGITAL CLEANSE

- ❖ Approved by the Auckland Health Research Ethics Committee on [insert approval date] for three years. Reference number AH22545.

DIGITAL CLEANSE

Appendix C: Consent Form to take part in the trial/experiment

Please carefully read and check the following statements about your consent in this study:

1. I have read or have had read to me the Participant Information Sheet. I have been given sufficient time to consider whether or not to participate in this study. I have had the opportunity to ask questions and was able to seek support from whānau/family or a friend to help me understand what the study involves. I am satisfied with the answers given to me, I understand the nature of the research and why I have been invited to participate.

2. I agree to take part in this research.

3. I understand my participation is voluntary.

4. I understand I am free to withdraw any data traceable to me up to two weeks after the completion of the interview without giving a reason.

5. 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.

6. I understand that data will be kept for six years and separate from the Consent Forms, after which they will be destroyed.

7. I know whom to contact if I have any questions about the study in general.

DIGITAL CLEANSE

2. I have read and checked the above statements and agree to take part in this research. *

   Mark only one oval.

   - ( ) Yes
   - ( ) No

3. I wish / do not wish to be contacted about opportunities to participate in future research related to this project (please choose one). *

   Mark only one oval.

   - ( ) I wish to be contacted
   - ( ) I do not wish to be contacted

4. I wish / do not wish to receive the summary of findings (please choose one). *

   Mark only one oval.

   - ( ) I wish to receive a summary of findings
   - ( ) I do not wish to receive a summary of findings

5. If you would like to receive a summary of the findings please enter your email below

   _____

Approved by the Auckland Health Research Ethics Committee on 16/07/2021 for three years. Reference number AH22545.

DIGITAL CLEANSE

Appendix D: Questionnaire

Kia ora koutou,

Thank you for agreeing to take part in the "Digital Cleanse" project. As explained earlier, the aim of this

study is to see if limiting social media use to 15 min a day for two weeks improves your wellbeing.

Let's quickly recap. If you want, a link to the full Participant Information Sheet is attached below:

Participant Info Sheet

What happens next?

First, we want to ask you questions about your wellbeing and Hauora (health), so we can compare how

you are before and after the "Digital Cleanse". It will take about 10 minutes.

What happens after you answer the questions?

At the end of the survey, the software will randomly (by chance) allocate you to either

• **start the Digital Cleanse now**

OR

• **wait for two weeks**

If you are instructed to start the Digital Cleanse now:

We ask that you limit your passive social media to 15 min a day from **next Monday** (that means you can

browse as much as you want until then!).

Remember, "passive social media" includes reading articles via Facebook/Instagram, scrolling, viewing

photos, watching stories/videos, and generally checking updates. We know that it's important to keep in

touch with family, whānau and friends so you're free to do that through apps such as Messenger,

WhatsApp, email, and text as much as you like during the Digital Cleanse.

DIGITAL CLEANSE

Keep going for 2 weeks. You will get an email from us to let you know it's time to do a second set of online questions.

What if I'm instructed to wait for 2 weeks?

In short, do just that! Use your social media as you would normally. After 2 weeks we will send you an email to let you know it's time to do a second set of online questions and then it's YOUR TURN to start the Digital Cleanse. After your two-week Digital Cleanse, you will get the third and final email from us asking you to fill the questionnaire.

If you're ready to go, click next and start your questionnaire.

GOOD LUCK, YOU GOT THIS!

The researcher doing this study is Charlie Whitfield who is completing his Master of Science in Psychology and he can be contacted cwhi934@aucklanduni.ac.nz. If you would like to contact Charlie's supervisor, please e-mail Dr Karolina Stasiak, Dept. of Psychological Medicine (k.stasiak@auckland.ac.nz).

This research project has been approved by the Auckland Health Research Ethics Committee AH22545.

First, a little bit about you:

1. How old are you?

    _____ years

2. What is your email address?

    _____

DIGITAL CLEANSE

3. What is your gender?

    ❏ Male

    ❏ Female

    ❏ Transgender

    ❏ Prefer not to say

4. What is your ethnicity? Choose all that apply

    ❏ Māori

    ❏ NZ European

    ❏ Samoan

    ❏ Tongan

    ❏ Fijian

    ❏ Cook Islander

    ❏ Niuean

    ❏ Indian

    ❏ Chinese

    ❏ Other (please specify) _____

5. What is your current employment/study status?

- ❏ Full Time Work

- ❏ Part Time Work

- ❏ University + Part Time Work

- ❏ University + Not Working

6. To what extent do you agree to the following statements? *(Participants ticked either agree or disagree)*

- ❏ My current use of social media causes me to feel stressed

- ❏ My current use of social media makes me less time efficient than I want to be

- ❏ I find it hard to turn social media off

- ❏ I feel I spend too much time on social media

- ❏ I use social media to procrastinate

7. Which statement most accurately describes motivated you to sign up to this study? You can be honest, no judgement!

- ❏ I want a short break from social media

- ❏ I want to decrease my social media use long-term

- ❏ I want to go into the prize draw

- ❏ I want to help you with your study

DIGITAL CLEANSE

❏ Other (please specify)

8. Of the following platforms, which cause you the most distress/you want a break from the most?

❏ Facebook

❏ Instagram

❏ TikTok

❏ Snapchat

❏ Reddit

❏ Twitter

❏ YouTube

❏ Tumblr

❏ Pinterest

❏ Other (please specify)

Screen Time

If you are unsure how to access "screen time" on your phone, please read the instructions below.

Otherwise, please continue to the next question.

Instructions on how to find screen time overall are given below. Once you find the overall screen time,

add together all of the screen time you've spent on **passive social media** only. Remember, messaging

apps such as Messenger and WhatsApp are **not** passive.

DIGITAL CLEANSE

For example:

3 hours on Instagram + 4 hours on Facebook + 2.5 hours on TikTok = 9.5 hours on passive social media

last week.

iOS (Apple):

Android:

DIGITAL CLEANSE

Step 1: Open Settings and tap Device Care.
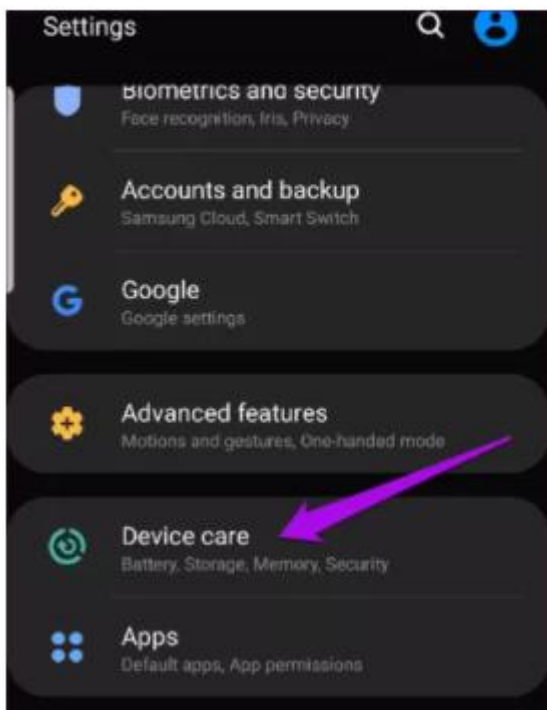
DIGITAL CLEANSE

Step 2: Tap Battery.

DIGITAL CLEANSE

You'll see a list of the apps you've been using, the total active hours or minutes, total battery usage in percentages at the right-hand side, and time the app has taken running in the background for the current day or whole week.
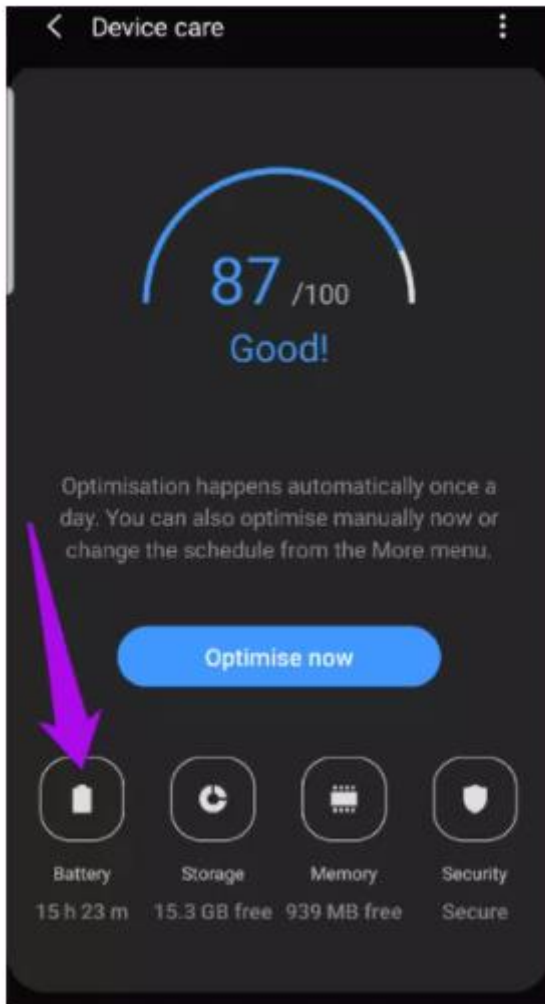

https://www.guidingtech.com/check-screen-time-different-devices/

DIGITAL CLEANSE

Social Media Usage

"**Passive** social media" is where you're absorbing information but not directly engaging with it. This

includes activities such as (but not limited to) watching Instagram/Facebook/Snapchat stories, scrolling

social media news feeds, and watching videos on YouTube/TikTok.

In contrast, **active** social media use is typically about messaging or communicating with friends and

family. This typically involves chat services such as WhatsApp, Messenger, Signal, or others.

Considering this, how much time **last week** did you spend using **passive** social media in **total**? We know

that most people access social media on their phones, but for the purpose of this study we ask that you

consider passive social media across ALL devices including laptops, computers, iPad's, tablets etc. Feel

free to check your 'screen time' to help you out with this.

- ❏ 0 – 2 hours
- ❏ 2 – 4 hours
- ❏ 4 – 6 hours
- ❏ 6 – 8 hours
- ❏ 8 – 10 hours
- ❏ 10 – 12 hours
- ❏ 12 – 14 hours
- ❏ 14 – 16 hours
- ❏ 16 – 18 hours

DIGITAL CLEANSE

      ❏ 18 – 20 hours

      ❏ 20 + hours

9. Which statement most accurately describes motivated you to sign up to this study? You can be honest, no judgement!

      ❏ I want a short break from social media

      ❏ I want to decrease my social media use long-term

      ❏ I want to go into the prize draw

      ❏ I want to help you with your study

      ❏ Other (please specify)

Next are two questions about your physical activity & exercise:

1. During the last 7 days, approximately how many hours did you spend each day engaging in moderate physical activities? Moderate activities include activities that make you breathe harder than normal, but only a little. Examples may include carrying light loads, playing golf, brisk walking, leisurely cycling/swimming or kapa haka practice.

      ❏ 0 – 10 minutes

      ❏ 10 – 30 minutes

DIGITAL CLEANSE

    ❑ 30 minutes – 1 hour

    ❑ 1 – 2 hours

    ❑ 2 – 4 hours

    ❑ 5 + hours

2. During the last 7 days, approximately how many hours did you spend each day engaging in vigorous physical activities? Vigorous activities include activities that make you breathe a lot harder than normal. Examples may include carrying heavy loads, playing rugby, netball, mountain biking, exercise classes/lifting weights or taiaha.

    ❑ 0 – 10 minutes

    ❑ 10 – 30 minutes

    ❑ 30 minutes – 1 hour

    ❑ 1 – 2 hours

    ❑ 2 – 4 hours

    ❑ 5 + hours

The next 7 questions are about your mental wellbeing

Below are some statements about feelings and thoughts.

DIGITAL CLEANSE

*Please tick the box that best describes your experience of each over the last **two weeks.***

STATEMENTS	*None of the time*	*Rarely*	*Some of the time*	*Often*	*All of the time*
I've been feeling optimistic about the future					
I've been feeling useful					
I've been feeling relaxed					
I've been dealing with problems well					

DIGITAL CLEANSE

I've been thinking clearly					
I've been feeling close to other people					
I've been able to make up my own mind about things					

The next section looks at your sense of life engagement. There are 6 questions.

Be as honest as you can throughout and try not to let your response to one question influence your response to other questions. There are no right or wrong answers.

DIGITAL CLEANSE

STATEMENTS	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
There is not enough purpose in my life					
To me, the things I do are all worthwhile					
Most of what I do seems trivial and unimportant to me					
I value my activities a lot					

DIGITAL CLEANSE

I don't care very much about the things I do					
I have lots of reasons for living					

The next ten questions ask about 'fear of missing out'.

Below is a collection of statements about your everyday experience. Using the scale provided please indicate how true each statement is of your general experiences. Please answer according to what really reflects your experiences rather than what you think your experiences should be. Please treat each item separately from every other item.

DIGITAL CLEANSE

STATEMENTS	Not at all true of me	Slightly true of me	Moderately true of time	Very true of me	Extremely true of me
I fear others have more rewarding experiences than me.					
I fear my friends have more rewarding experiences than me.					
I get worried when I find out my friends are having fun without me					

DIGITAL CLEANSE

I get anxious when I don't know what my friends are up to.				
It is important that I understand my friends "in jokes".				
Sometimes, I wonder if I spend too much time keeping up with what is going on.				
It bothers me when I miss an opportunity to meet up with friends.				

DIGITAL CLEANSE

When I have a good time, it is important for me to share the details online (e.g. updating status).				
When I miss out on a planned get-together it bothers me.				
When I go on vacation, I continue to keep tabs on what my friends are doing.				

DIGITAL CLEANSE

The next 8 questions ask you about your social wellbeing and connection to other people

STATEMENTS	Never	Rarely	Sometimes	Often
I lack companionship				
There is no one I can turn to				
I am an outgoing person				
I feel left out				

DIGITAL CLEANSE

I feel isolation from others			
I can find companionship when I want it			
I am unhappy being so withdrawn			
People are around me but not with me			

The final section will ask 5 questions about your sleep.

Please reflect on your sleep in the last two weeks.

QUESTION	*Rarely/Never*	*Sometimes*	*Always*
Are you satisfied with your sleep?			

DIGITAL CLEANSE

Do you stay awake all day without dozing?			
Are you asleep (or trying to sleep) between 2am – 4am?			
Do you spend less than 30 minutes awake at night?			
Do you sleep between 6 and 8 hours per day?			

Thank you for taking time to answer these questions.

When you click the next button, the software will electronically 'flip the coin'.

Ready? ☐ YES

DIGITAL CLEANSE

Randomisation takes place.

DIGITAL CLEANSE

Appendix E: Interview Consent Form

CONSENT FORM - INTERVIEW

"Digital Cleanse" - Exploring the effects of limiting social media on wellbeing.

This form will be held for a period of six years.

Research Team

Masters student researcher:
Charlie Whitfield
cwhi934@aucklanduni.ac.nz

Primary supervisor:
Dr Karolina Stasiak
k.stasiak@auckland.ac.nz

* Required

Please carefully read and check the following statements about your consent in this interview:

1. I have read or have had read to me the Participant Information Sheet. I have been given sufficient time to consider whether or not to participate in this study. I have had the opportunity to ask questions and was able to seek support from whānau/family or a friend to help me understand what the study involves. I am satisfied with the answers given to me, I understand the nature of the research and why I have been invited to participate.

2. I agree to take part in this research.

3. I understand my participation is voluntary.

4. I understand I am free to withdraw any data traceable to me up to two weeks after the completion of the interview without giving a reason.

5. 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.

6. I understand that data will be kept for six years and separate from the Consent Forms, after which they will be destroyed.

7. I know whom to contact if I have any questions about the study in general.

8. I understand the interview will take around 30 minutes to complete.

9. Even if I agree to be recorded, I understand that I can ask for the recording to be stopped at any time without giving a reason.

1.   My name is *

_____

DIGITAL CLEANSE

2. I have read and checked the above statements and agree to take part in this research. *

Mark only one oval.

◯ Yes

◯ No

3. I agree / do not agree to be recorded (please choose one). *

Mark only one oval.

◯ Agree

◯ Disagree

4. I wish / do not wish to have my recordings returned to me (please choose one) *

Mark only one oval.

◯ I wish to have my recordings returned to me

◯ I do not wish to have my recordings returned to me

5. I wish / do not wish to be contacted about opportunities to participate in future research related to this project (please choose one). *

Mark only one oval.

◯ I wish to be contacted

◯ I do not wish to be contacted

Approved by the Auckland Health Research Ethics Committee on 16/07/2021 for three years. Reference number AH22545.

Appendix F: Interview Schedule

1. Overall, how did you find the cleanse?

2. Did you "fall off the wagon" at any point? What made that happen?

3. What was the most challenging part of the study? Why?

4. What was the most enjoyable part of the study?

5. Were there certain times of the day/night that it became easier or more difficult? How did you manage yourself when it became difficult?

6. Were there specific apps you missed/didn't miss using more than others?

7. What did you do to cope with not using social media as much?

8. What is the most important thing you've learned from taking part in this study? Do you plan to continue limiting social media?

9. Is there any feedback you have for us/the researchers?